GEORGIA'S

Connecting Writing to Technology Education

TECHNOLOGY Education

GEORGIA DEPARTMENT OF EDUCATION

Kathy Cox

State Superintendent of Schools

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Connecting Writing to Technology Education

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Connecting Writing to Technology Education Philosophy

Humans have historically used communication techniques to transmit information. From smoke signals to the most advanced GPS systems, communication will always play a vital role in the technological process. Along with the rapid change in technology, every individual must learn to adapt because of the complicated and unpredictable nature of these changes. In today's world, technology is complex and includes but is not limited to research, design, development, and communication. As individuals make informed decisions about technological issues, they will need to communicate these ideas to others. Through the development of critical thinking skills, open-ended design activities, and utilizing technological systems, individuals will gain knowledge to effectively communicate their thoughts, ideas, dreams, and designs to others. This manual is designed to foster and develop communication skills for all students while equipping them with confidence to compete in an ever-changing technological world.

Some specific goals of this manual are:

- To further develop writing skills as they apply to Technology Education
- To build confidence within each student in their ability to comprise a written document
- To improve writing skills and knowledge as they apply to different content areas
- To communicate thoughts and ideas effectively through writing
- To develop critical thinking skills through writing activities
- To integrate and apply new terminology and concepts into real world applications
- To improve research and document writing skills
- To continually develop writing skills from K-12 and beyond
- To comprehend and process written information
- To help students visualize the fun and enjoyment in writing
- To interpret and develop written documents as they relate to technical systems
- To develop problem solving skills through written activities

To closely align the activities in this manual with the educational requirements for the Georgia Department of Education, the following Quality Core Curriculum standards will be addressed:

1. Topic: Reading
   Standard: Demonstrates the ability to accurately identify, locate, understand, and interpret written information (manuals, graphs, work orders, schedules, publications, etc.).

2. Topic: Writing
   Standard: Communicates thoughts and information accurately in writing by creating and editing documents (letters, memos, directions, manuals, reports, graphs, flowcharts, etc.).

4. Topic: Listening
   Standard: Receives, comprehends, interprets, and responds to verbal and nonverbal messages appropriate to a given situation.

6. Topic: Creative Thinking
   Standard: Creates, combines, and connects ideas and information.

7. Topic: Decision-Making
   Standard: Specifies goals, generates choices, considers risks, evaluates, and chooses workable alternatives.

8. Topic: Problem-Solving
   Standard: Recognizes a problem, identifies the cause, develops and implements solutions, and evaluates results.

9. Topic: Accountability
   Standard: Takes initiative to accomplish tasks in a conscientious and timely manner.

12. Topic: Ethics
    Standard: Demonstrates the ability to be trusted.

13. Topic: Ethics
    Standard: Demonstrates an understanding of proper business/work ethics.

15. Topic: Teaching
    Standard: Shares knowledge and skills with others.

17. Topic: Leadership
    Standard: Understands and respects leadership roles.

20. Topic: Negotiation
    Standard: Demonstrates the ability to resolve issues.

21. Topic: Working with Diversity
    Standard: Demonstrates the ability to perform in a work environment with people of different age, gender, culture, attitude, and ability.

22. Topic: Using Technology
    Standard: Knows and applies changing technology.

24. Topic: Work Environment
    Standard: Maintains safety, health, and environmental standards in the vocational lab classroom and in work-based learning situations.

25. Topic: Work Environment
    Standard: Understands and applies health, safety, and environmental standards when using and disposing of hazardous materials, including knowledge and use of appropriate governmental forms.

26. Topic: Career Awareness
Standard: Makes potential career decisions based upon interests, abilities, and values and formulates appropriate plans to reach career goals.

28. Topic: Career Awareness
Standard: Identifies key elements that comprise professional standards and appropriate behavior.

29. Topic: Career Awareness
Standard: Understands that people must be prepared for career changes.

31. Topic: Transitions
Standard: Demonstrates an understanding of education as a lifelong learning process.

32. Topic: Application of Technology Systems
Standard: Demonstrates knowledge and skill regarding diverse technology systems, including their functions and applications.

33. Topic: Application of Technology Systems
Standard: Demonstrates an understanding of the evolution of technology.

34. Topic: Application of Technology Systems
Standard: Demonstrates knowledge of and performs tasks representative of technology-based careers (engineers, technicians, draftspersons, etc.)

35. Topic: Problem solving using technology
Standard: Solves problems with technology using a systems approach and a variety of resources including information, tools and materials.

36. Topic: Identify and describe resources
Standard: Identifies and describes the basic resources used for technological concepts being studied.

37. Topic: Nature, Impacts, and Evolution of Technology
Standard: Demonstrates knowledge of the nature of technology and the relationships and impacts among technological achievement, the environment, the advancement of science, the individual, and society. The context for this knowledge shall be historical, current, and futuristic.

38. Topic: Problem Solving Using Technology
Standard: Demonstrates ability to solve problems with technology using a systems approach, higher-order thinking skills, individual and collaborative ingenuity, and a variety of resources including information, tools, and materials.

39. Topic: Informed Decisions About Technological Issues
Standard: Makes ethical decisions about technological issues, including the development and use of technology and technological resources.

40. Topic: Use Technology Resources
Standard: Demonstrates in an experiential setting the safe, effective, and creative use of technology resources, including tools, machines, and materials, in performing technological processes.

41. Topic: Application of Science, Mathematics and Other Areas
Standard: Applies science, mathematics, and technological concepts to solve practical problems and extend human capabilities.

42. Topic: Analyze Impact
Standard: Analyzes the positive and negative impact of technological concepts being studied on society and the environment.

43. Topic: Research
Standard: Retrieves current information about technological concepts being studied using periodical indices and computer data bases.

Implementation

This writing activities manual has been developed to enhance the nonverbal, cognitive, and creative skills of students studying in the area of technology education. To further develop the connection with writing and technology education, the manual presents a variety of activities in the systems of information, physical, and bio-medical. The manual can be used as a supplementary resource to reinforce the concepts discussed in the technology education laboratory. In addition, the activities presented incorporate safety, career awareness, terminology, research, and information useful in an ever-changing society.

Some suggested uses for this manual are:

1. Integrate writing activities into the curriculum
2. Supplementary activities during modular assignments
3. Continued curriculum excellence when absent from the technology education laboratory
4. Meaningful homework assignments
5. Enrichment development for all students

The Seven C's of Writing

Students in the technology education program should be provided the opportunity to create a variety of written documents. The primary thrust has been to give instruction in composing documents, but the activities in this manual allow for development in a variety of written formats.

The following seven C's of writing should be used when developing written documents:

1. Be Clear:	think through what you are writing
2. Be Correct:	grammar, punctuation and spelling reflect on your competence and credibility
3. Be Concise:	come straight to the point
4. Be Complete:	only include needed details
5. Be Courteous:	respect the diversity of others, be pleasant and friendly
6. Be Concrete:	give specifics
7. Show Character:	reflect personal creativity, development, and style

Research Writing and Documentation

Research is a foundational component of the Informational, Physical, and Biomedical systems studied in the Technology Education curriculum. Before a structure can be designed, a product can be manufactured, a new software package is developed or pharmaceutical merchandise is distributed to the public research is conducted. Preliminary research is needed to help prevent initial problems, alleviate any questions or concerns, and necessary to create a safe, useful, and appropriate product.

Research papers are newly created works that consult several sources to answer a question or problem. In a research paper, students are expected to develop a point of view toward the material, take a stand, express some original thoughts, and draw a conclusion form the information gathered and presented. To help present a clear understanding and successfully compose a research paper, the table below compares and contrasts positive and negative components that should be discussed before starting a research paper.

A Research Paper *IS:*	**A Research Paper *IS NOT:***
• Synthesizes discoveries about a topic and judgment, interpretation, and evaluation of those discoveries	• Summary of an article or a book
• Work that shows student's personal and original thoughts and ideas	• Ideas of others, repeated uncritically
• Acknowledges all sources used	• Unsubstantiated personal opinion
• Shows continued writing commitment and growth in the student's educational development	• Copying or accepting another person's work as your own and not acknowledging credit for all sources used

To successfully develop a well-written research paper, the following steps are given:

Step 1: Research topic and gather information
Step 2: Organize facts, thoughts, and findings into an outline
Step 3: From the outline, prepare a rough draft, working paper, and final product
Step 4: Document all sources

Step 1

Research and Gather Information

Before any research paper can be composed, information on the selected topic must be collected. Research material can be compiled from of a variety of places including books, journal articles, personal communication, television and video, and the internet. A variety of sources will provide a larger assortment of information on the selected topic and improve research skills.

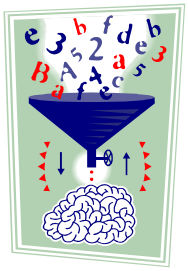
When using different approaches to gathering information, the following guidelines should be considered:

Source	Guidelines when using this medium
Books Books are documents (hardback or paperback) published to provide basic information on a specific content.	1. Try a content search under specific topic name (i.e. robotics, laser and fiber optics, etc.) 2. If little information is generated under specific topic, use broader base title searches (i.e. manufacturing, communication, etc.) 3. Use full topic name not abbreviations (i.e. CADD instead use Computer Aided Drafting and Design)
Journal Articles Journal articles are popular publications published in the mass media commonly found for sale at newsstands, in bookstores, or through national and international organizations. Journal articles in these types of publications generally are reviewed by the publication source and typically list sources of the information used as background to write the article for further investigation on the subjected discussed.	One of the leading sources for retrieving information on journal articles is Galileo. Galileo is a system wide library services in the state of Georgia that allows libraries to share databases and information through an on-line medium. Galileo can be accessed from the following web address: http://www.galileo.peachnet.edu/ Some tips for using Galileo: 1. Get acquainted with the system. Galileo offers a Where to Begin sections on the home page that provides tips and information on the system. 2. In the content section for Where to Begin, select Finding Scholarly Articles. This section provides basic information on what type of journal articles are available. 3. To become familiar with Galileo journal

	search options, start a basic journal search with Academic Search Premier. This database search is easy to use and allows for a variety of search options.
Personal Communication Personal communication can include personal interviews, telephone interviews, or multimedia interviews (teleconferencing, e-mail, etc.)	1. Use community members to help bring real-world experience into the research paper. 2. When conducting an interview, have questions prepared in advanced to avoid. 3. Be prompted, courteous, and give thanks to the person being interviewed.
Internet The Internet is a public, cooperative, and self-sustaining worldwide system of computer networks that allows one user at any one computer to get information and talk directly to users at other computers around the world.	1. Identify important concepts or keywords that describe the research topic. 2. Choose a search engine (i.e. Lycos. AltaVista, MSN search, etc.). 3. Read and understand the search engine's home page for search instructions. Each search engine may have different procedures for conducting a through search. 4. Evaluate the search results and visit generated sites. Don't become discouraged if desired information is not retrieved immediately. 5. Modify search terms if needed. Sometimes different search engines use different key terms for the same content or subject topic (i.e. world wide web and internet will generate different search results).

Individual Student Activity: Assign each student a topic for research from below (or use your own). Have students use a minimum of three different research methods to gather information on the given topic.

Robotics	Plastics	Automation	Desktop Publishing
Pneumatics	Hydroponics	Space Travel	Telecommunications
Computers	Genetics	Electronics	Digital Photography
Aviation	Lasers	Satellites	Environmental Conservation
Mass Media	Animation	Hydroelectric Power	Computer Aided Drafting



Step 2

Organize Information into an Outline

Once information is gathered for the research paper, an organized method of sorting the information into similar sub-topics is suggested. An outline is a simple and effective way to visualize and develop concepts in the research paper. Outlines help organize thoughts and ideas, show connections among ideas, and provide an order to the research paper.

Below is a sample outline:

Basic Computer Terminology

I. Hardware
   - A. Internal
     1. CPU
     2. Motherboard
     3. Video Card
   - B. External
     1. Monitor
     2. Keyboard
     3. Serial Cable

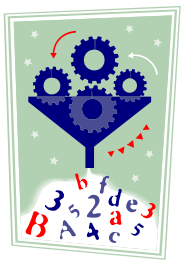
II. Software
   - A. Word Processing Applications
     1. MS Word
     2. Word Perfect
     3. Notepad

III. Computer Safety
   - A. Electrical Precautions
   - B. Liquid Precautions
   - C. Maintenance Precautions

Student Group Activity: In small groups, have students create an outline for one of the following topics:

Transportation Construction Manufacturing Communication

Individual Student Activity: Have each student develop an outline with the information gathered in step 1.

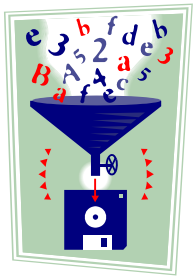


Step 3

Compose the Research Paper

Composing the research paper is not an easy task. Several aspects exist and require careful consideration before the final product. Many different formats exist and can be adapted to fit any individual's writing style or instructor's requirements. The table below is a basic guideline for the parts of a research paper.

Parts of the Research Paper	**Suggestions**
1. Title Page	Title of Paper Name of Author School Name Instructor's Name Date
2. Abstract	This is usually a one to three paragraph summary of the research paper
3. Outline	This helps to visualize the topic presented in the research paper
4. The Paper	This usually consists on three parts: 1. *Introduction paragraph(s)* – states the purpose or topic of the paper and introduces concepts presented throughout the paper 2. *Body Paragraphs* – presents ideas, information and support materials on the research topic 3. *Conclusion Paragraph(s)* – brings the main argument of the paper to a close and summarizing your ideas on the topic
5. Bibliography or Works Cited Page	This page(s) documents all sources used in the research paper



Step 4

Document and Cite all Sources

Documenting sources is an important part to any research paper. Not citing where material or information is obtained from may result in allegations of plagiarism. Citing all resources used in the paper is common courtesy and gives strong support to the ideas presented. There are several methods available for citing or referencing source. The two most widely accepted formats are MLA (Modern Language Association) and APA (American Psychological Association). Colleges and universities throughout the United States commonly accept both of these formats. It is the responsibility of the instructor to select an appropriate method for their classroom requirements.

The table below is a basic guideline for MLA and APA formats:

MLA Format	**APA Format**
http://www.mla.org/ Official website for MLA. Lists tips and answers frequently asked questions concerning MLA format.	http://www.apastyle.org/elecref.html Official website for APA. Lists tips, answers frequently asked questions, and style tips of the week.
http://www.english.uiuc.edu/cws/wworkshop/bibliography/mla/mlamenu.htm This site developed by Illinois University (Urbana Champaign) Writer's Workshop,	http://webster.commnet.edu/apa/apa_index.htm This site developed by Capital Community College, is a guide for writing research papers based on styles recommended by The American Psychological Association.
http://owl.english.purdue.edu/handouts/research/r_mla.html This site developed by Purdue University Online Writing Lab provides basic information and examples on The Modern Language Association format.	http://owl.english.purdue.edu/handouts/research/r_apa.html This site developed by Purdue University Online Writing Lab provides basic information and examples on The American Psychological Association format.

Name: _____

Learning Objective: Upon competition of this activity, the student will have a better understanding of Galileo, a system wide library services in the state of Georgia that allows libraries to share databases and information through an on-line medium.

Directions: The purpose of this scavenger hunt is to familiarize you with the Galileo web site. During the hunt, you will find and record various bits of information on a variety of topics. Answer all questions in the order they are presented and place answers in the space provided. Gook luck and smart hunting!

To begin the scavenger hunt, enter the following address in your web browser's address box

http://www.galileo.peachnet.edu/

1. From the Galileo home page select About GALILEO. Next, select the long, but short history of GALILEO. Using the information provided, what day was GALILEO officially launched throughout the University System of Georgia institutions?

   _____

2. Select the GALILEO home page link and then Kid's Stuff from the left hand column. Next, select Funk & Wagnalls New World Encyclopedia link. Select the General Encyclopedia link, and enter the word "Robot" in the search field and then search. Select the robot abstract Item No: QR000000584. Using the abstract information, what does the term robot, derived from the Czech word *robota*, mean?

   _____

3. Select the GALILEO home page link in the upper left corner and then Earth Sciences from the left hand column. Next, select Environmental Sciences and Pollution

Management Set link. Under Quick Search find, enter the word solar energy and then search. Select view record for journal title Sustainable Cultivation Concepts for Domestic Energy Production from Biomass (record 14) by M. Karpenstein-Machan. Using the abstract information, what percent will Biomass contribute to the increased use of renewable resources by the year 2010?

_____

4. Select the GALILEO home page link in the upper left corner and then Engineering and Physical Sciences from the left hand column. Next, select Bioengineering Abstracts. Under Quick Search find, enter the word genetics and then search. Select view record for journal title Molecular genetics of Thiobacillus ferrooxidans and other mesophilic, acidophilic, chemolithotrophic, iron- or sulfur-oxidizing bacteria (record 1) by D. Rawlings. Using the abstract information, what division have the thiobacilli been placed in?

_____

5. Select the GALILEO home page link in the upper left corner and then High School from the left hand column. Next, select Career and Job Information. Under Job Search Strategies and Advice, select Resumes. Next, select preparing a resume under the Resume heading. Using the provided information, answer the following questions:

   A. What is the purpose of a resume?

   _____

   B. What two formats are available for experience?

   _____

   C. List three active verbs that describe you:

   _____

6. Select the GALILEO home page link in the upper left corner and then High School from the left hand column. Next, select MAS Full TEXT Ultra. Under limit your results, check full text box, type mass communication in the find box, and select search. Select the title Talking to the World (record 7). Using the provided information, answer the following questions:

   A. Throughout the 19th century, what organization formed the bedrock of national and international communications?

   _____

   B. Of all the ***mass*** media, what type has had the most profound influence?

   _____

   C. What country was the first to guarantee press freedom?

   _____

7. Select the GALILEO home page link in the upper left corner and then Government Publications from the left hand column. Next, select Census Data and then Georgia Census Data Map. Using the People, Business, and Geography Quick Facts information, answer the following questions:

   A. Population for Georgia _____ and USA _____

   B. High school graduates for Georgia _____ and USA _____

   C. Federal Funds and grants for Georgia _____ and USA _____

   D. Persons per Square Mile for Georgia _____and USA _____

8. Select the GALILEO home page link in the upper left corner and then Arts and Humanities from the left hand column. Next, select American Poetry 2: 1901-1997, enter technology in the search for field, and select start search. Under Robin Becker, select the poem The Problem of Magnification. Read the poem and write a paragraph reflecting your thoughts and interpretations of the poem.

   _____

   _____

   _____

9. Select the GALILEO home page link in the upper left corner and then Business and Economics from the left hand column. Next, select Business Wire News, enter computer manufacturing in the find field, and select search. Select the title PC Manufacturers must diversity to compete (record 7). Using the provided information, answer the following questions:

   A. What was introduced by the 1980's?
   _____

   B. During the publication on this journal article who were the top 5 PC makers?
   _____

10. Select the GALILEO home page link in the upper left corner. What is GALILEO?

    _____

Answers to GALILEO Scavenger Hunt

1. September 21, 1995
2. Compulsory labor
3. 83%
4. The Proteobacteria division
5. a. to get you a job interview
   b. functional and chronological
   c. accomplish; achieve; analyze; adapt; balance; collaborate; coordinate; communicate; compile; conduct; contribute; complete; create; delegate direct; establish; expand; improve; implement; invent; increase; initiate; instruct; lead; organize; participate; perform; present; propose; reorganize; research; set up; supervise; support; train; travel; work, etc.
6. a. postal service
   b. those printed on paper
   c. Sweden
7. Answers may vary with additions of new census data
   a. 8,186,453 and 281,421,906
   b. 2,853,605 and 119,524,718
   c. 39,214,971 and 1,516,775,001
   d. 141.4 and 79.6

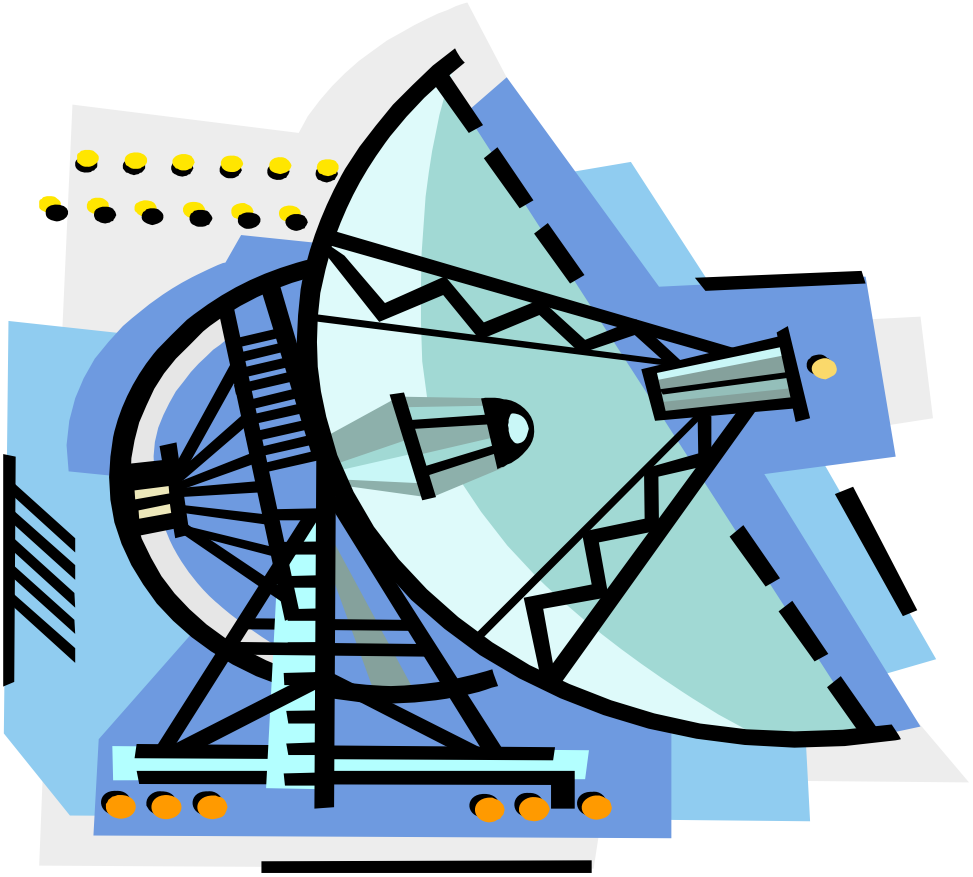
8. All student will have different interpretations of the poem.
(Poem) "The Problem of Magnification"

1 Today after class, my student explains to me
2 how he and his roommate plan to trap
3 history between two enormous mirrors they will install
4 in space. He is particularly interested in sixteenth-century
5 explorers, coastal South American countries,
6 wooden boats circumnavigating the globe.
7 Kindly, my student instructs me in the development
8 of laser technology, he persuades me with heroic accounts
9 of electromagnetic radiation, fabulous as any resurrection.
10 History, he says, is all matter,
11 and matter cannot be destroyed. A lasso of light sparks
12 from his chalky fingers as he describes the problem of magnification.
13 Today you would lose the fine hairs on Magellan's arms,
14 the grain in the wood of his mast. Soon, he assures me, technicians
15 will perfect the lens, the light will refract,
16 and the boys will see the trees of Tierra del Fuego
17 as they appeared to the Portuguese commander.
18 Tonight my student and his roommate elucidate the elegant equations.
19 Their dormitory room is a planetarium
20 of faith, earth a lonely place, miles from anywhere,
21 a penciled circle on the small schematic diagram.

9. The Personal Computer

10. Compaq, Dell, Hewlett-Packard, IBM and Fujitsu
Award winning initiative of the University System of Georgia initially funded by governor Miller and the General Assembly in 1995, with continuing funding from Governor Barnes and the General Assembly for the Citizens of Georgia.

Information



Systems

Computer Applications

COMPUTER APPLICATIONS:

Upon completion of the activities in this unit, students will:

- Be able to identify some general facts in the history of computers.
- Be able to identify basic computer components.
- Posses an understanding of some basic tips in disk care.
- Recognize some of the uses of computers in the workplace.
- Recognize the differences between most input and output devices.
- Gain experience in answering a job advertisement.
- Have the ability to correctly define certain computer terms.

COMPUTER APPLICATIONS
Name_____

Learning Objective: Upon completion of this activity, the student will understand some basic tips in disk care.

Computer Disk Safety

Directions: You know that it is most important to handle disks properly. To use as a reminder, complete the following warnings with appropriate responses. Write these ten commandments of disk care on your own paper.

Helpful Words in Disk Care:

Label end	Storage case
Temperature	Magnetic field
Disk drive	Candy bar
Ballpoint pen	Felt tip pen
In use	Monitor
Anything	Bend
Jacket	

1- DO NOT _____ the disk media with _____!!!

2- Hold the disk by _____.

3- Keep the disk away form any _____.

4- Do not place the disk on top of _____.

5- Keep your disk in a _____.

6- Do not write on the disk with a _____. Use a _____.

7- Do not _____ the disk.

8- When not in use, keep the disk in its _____.

9- Avoid _____ extremes. (If it will melt a _____it is too hot for a disk).

10- Do not remove the disk from the _____ with the red "_____" light on.

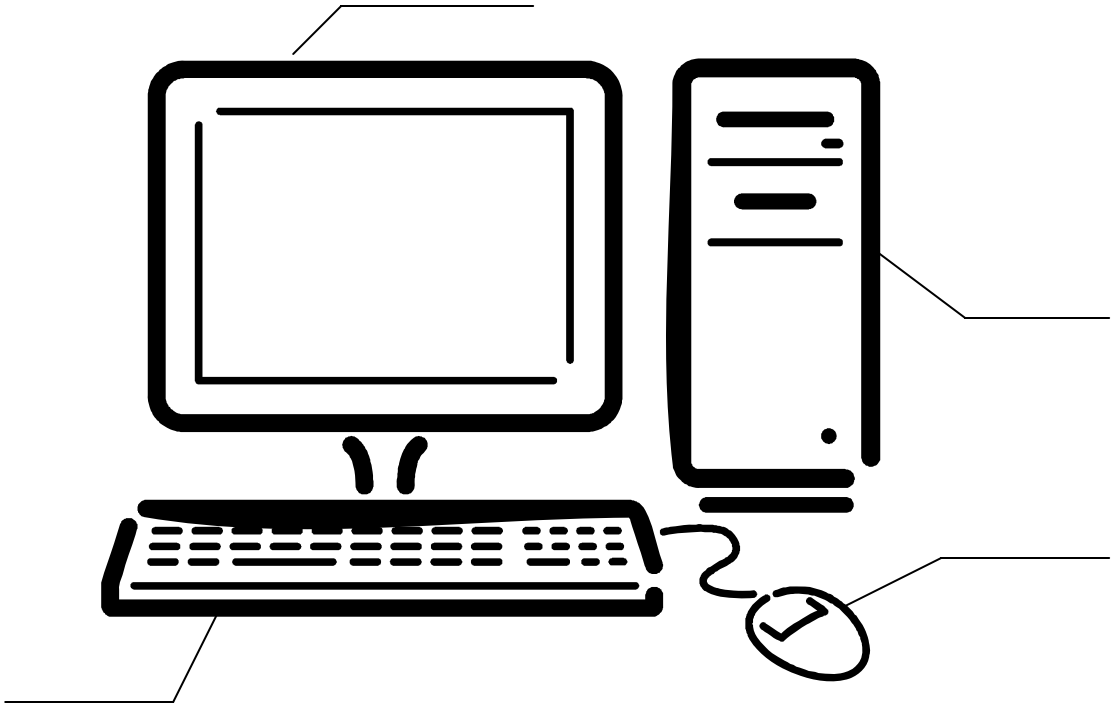
COMPUTER APPLICATIONS

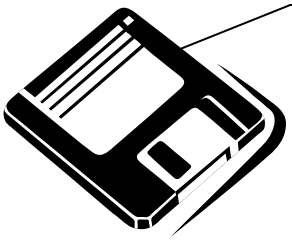
Name_____

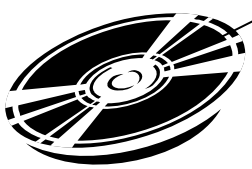
Learning Objective: Upon completion of this activity, the student will be able to identify basic computer components.

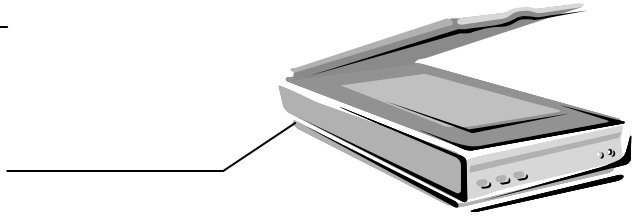
Parts Identification

Directions: Fill in the blanks with the correct computer component. Use the following terms: Keyboard, Floppy Disk, CPU (Central Processing Unit), Mouse, CD, Scanner, and Monitor.









COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this project, the student

WORD SEARCH

Directions: Find the words listed below.

H	P	Y	M	D	L	T	O	E	L	K	G
Y	W	E	I	A	E	M	X	Z	C	R	N
P	R	S	R	J	R	P	T	I	H	A	I
E	K	A	K	I	L	G	L	H	T	B	K
R	M	N	M	O	P	C	O	L	T	K	S
L	I	A	R	K	E	H	I	R	P	S	A
I	A	E	I	L	Y	U	E	U	P	A	T
N	R	W	B	L	G	T	P	R	J	T	I
K	W	U	E	R	A	W	D	R	A	H	T
W	O	Q	M	O	U	S	E	P	G	L	L
D	P	R	O	G	R	A	M	M	E	R	U
T	N	O	F	Y	I	S	P	M	S	F	M

DISK	DOUBLECLICK	EMAIL
EXPLORER	FONT	GUI
HARDWARE	HTML	HTTP
HYPERLINK	INKJET	ISP
MOUSE	MULTITASKING	PERIPHERAL
PROGRAM	PROGRAMMER	RAM
TASKBAR	URL	WWW

COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will have been exposed to some careers in the computer animation field.

Careers in Computer Animation

Directions: Choose one of the jobs listed below. Then, list the things that you think you would enjoy about working in that job. After writing down all of the things you would like, make a list of the things that you think you would dislike about the job. On a separate sheet of paper, share your list with the class in a brief report and turn it in to your instructor.

Software Integration Engineer

Software consulting firm seeks integration engineer to work with clients in the field. Will be required to write code that will act as interface between software programs. Must have experience in writing code and be familiar with a variety of software languages and programs, including animation software. Excellent working environment. Apply to: Fisher Software Consultants, 55 West Eagle Drive, Atlanta, GA 30032.

CD-ROM PRODUCER

Major publishing house needs a CD-ROM producer. Will be involved in all facets of production. Must create concepts and work with editors, authors, designers, and programmers. Experience as a production assistant helpful. Degree and experience in animation, programming, or graphic arts required. Submit resume to: Lane Street Publishers, Inc., 344 East 95th Street, New

Software writer

Multimedia software publishing company has an opening for a software writer to write code in COBOL or C+ language. Work as part of a team to create applications. Bachelor's degree in computer science or management information systems preferred. Must be logical thinker and be able to set goals. Competitive salary. Send resume to: Media Publishers, 6604 Strickland Street, Minneapolis, MN 40502.

Computer Programmer

Opportunities for computer programmers who enjoy state-of-the-art technology and new application development. Two years of programming experience preferred. Bachelor's degree in computer science or related field and good communication skills required. Competitive salary and benefits package. Send resume to: Software Solutions, Inc., 6090 Front Street, San Francisco, CA 90022.

ANIMATOR

Imagination combined with strong artistic and technical skills required for animator position at computer game development company. Formal art training required. Finalists will be required to take drawing tests. Must be able to work well under tight deadlines. Apply to: National Computer Games, 100 East Samson Avenue, Suite 34, Austin, TX 70033.

COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will be able to gather information about a chosen career option.

Careers in Computers

Directions: Choose a career that is of interest to you in the field of computers and gather information about it. When you have gathered all of your information, create a flyer that explains this career in an informative and creative way. The exact way you choose to do this will be your personal choice but do not forget education requirements, job description, employment opportunities, location, etc.

COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will be able to identify some general facts about computers.

Information Resources

Directions:

1. Matching: Match each item in the left-hand column with the correct description from the right-hand column. Write the letter of the correct description in the space provided.
2. True- False: On the line beside each statement, write **True** if the statement is correct and **False** if the statement in incorrect.

MATCHING

_____1- input	a. Computer linked to a central controlling computer
_____2- program	b. The computer's brain
_____3- central processing unit	c. Information placed in a computer
_____4- output	d. Information that has been processed by a computer
_____5- network	e. Computer station
_____6- terminal	f. Set of computer instructions

TRUE- FALSE

_____7- Data processing systems organize raw data into information.

_____8- A keyboard is the only input device for computers.

_____9- Computer output can be in the form of a display on a monitor screen.

_____10- Computer data is usually stored in documents and books.

_____11- All computers contain at least four basic parts.

_____12- Communication, transportation, production, and biotechnology all depend on information resources.

_____13- A data processing system can only organize information in one form.

_____14- It is impossible for an information system to collect, organize, store, and send information.

_____15- The central processing unit of a computer carries out the instructions provided by the operator through an input device.

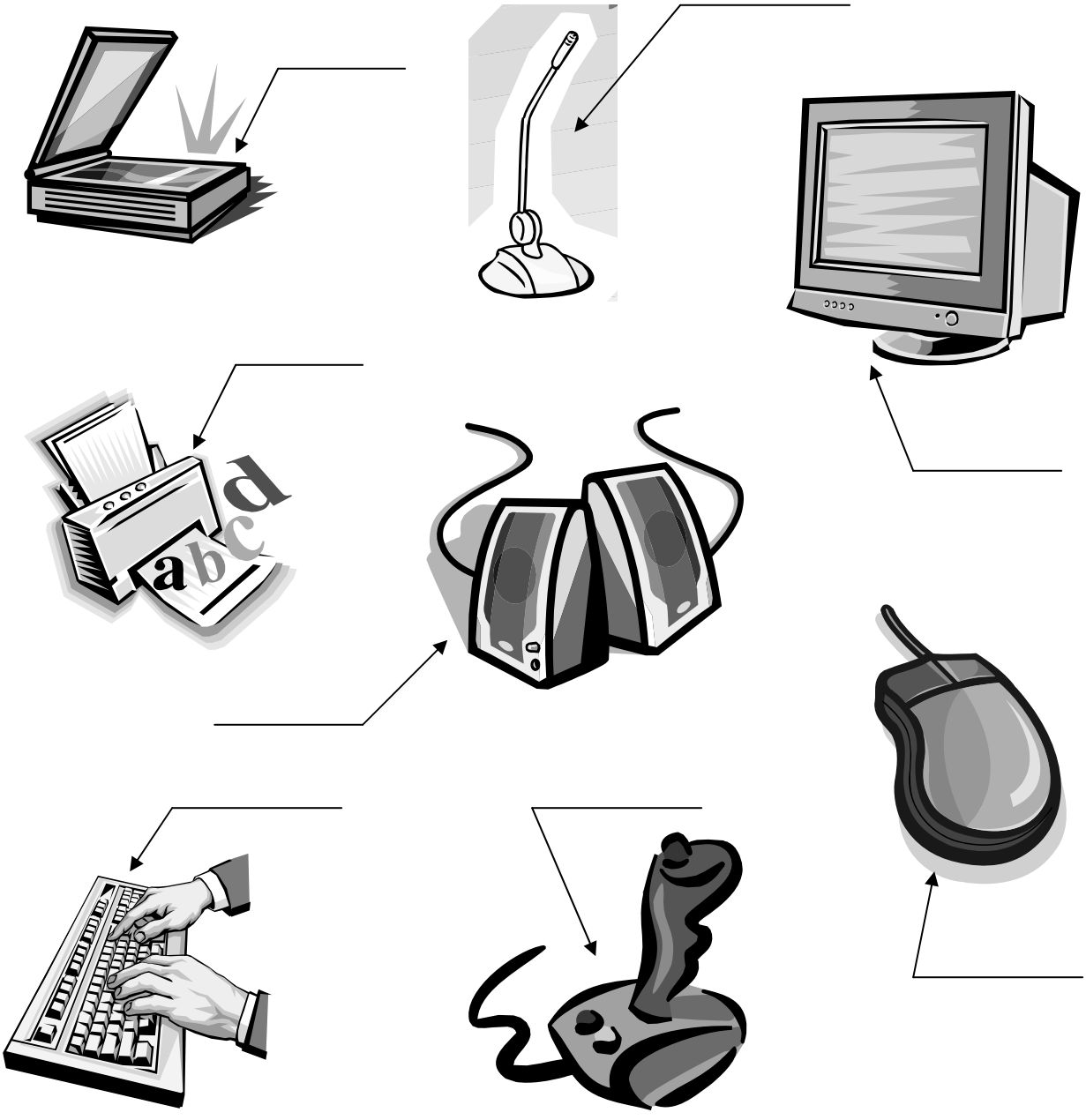
COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will recognize the differences between most input and output devices.

Input and Output Devices

Directions: In the blank provided, write “Input” or “Output” to label each device properly.



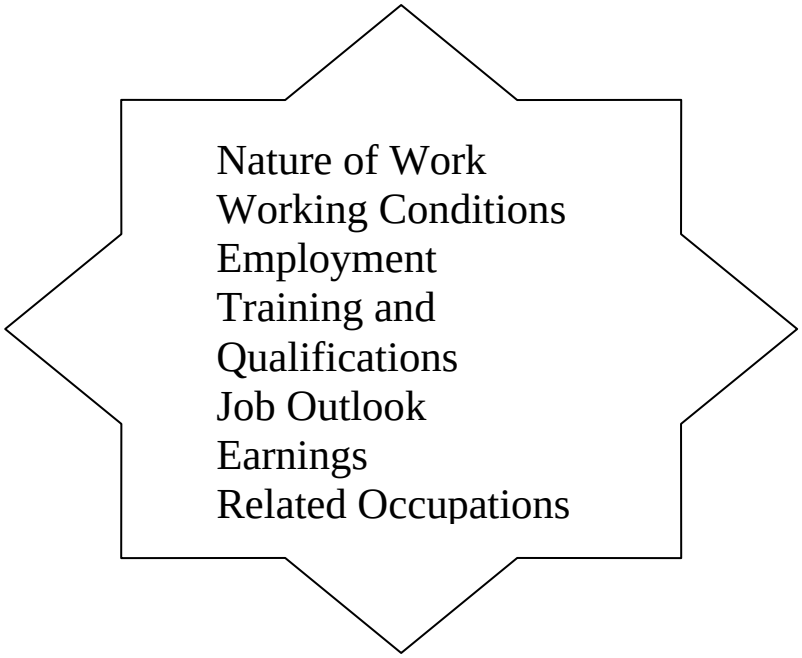
COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will be exposed to careers in the field of the Internet.

Occupational Outlook Into Computer Applications

Directions: Using your Web browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohomw.htm). If this address doesn't work, use a search engine to locate the current address. Use the handbook to research information on occupations that involve computer applications. Select one career and summarize in a two-page report what you discovered. Include the following:



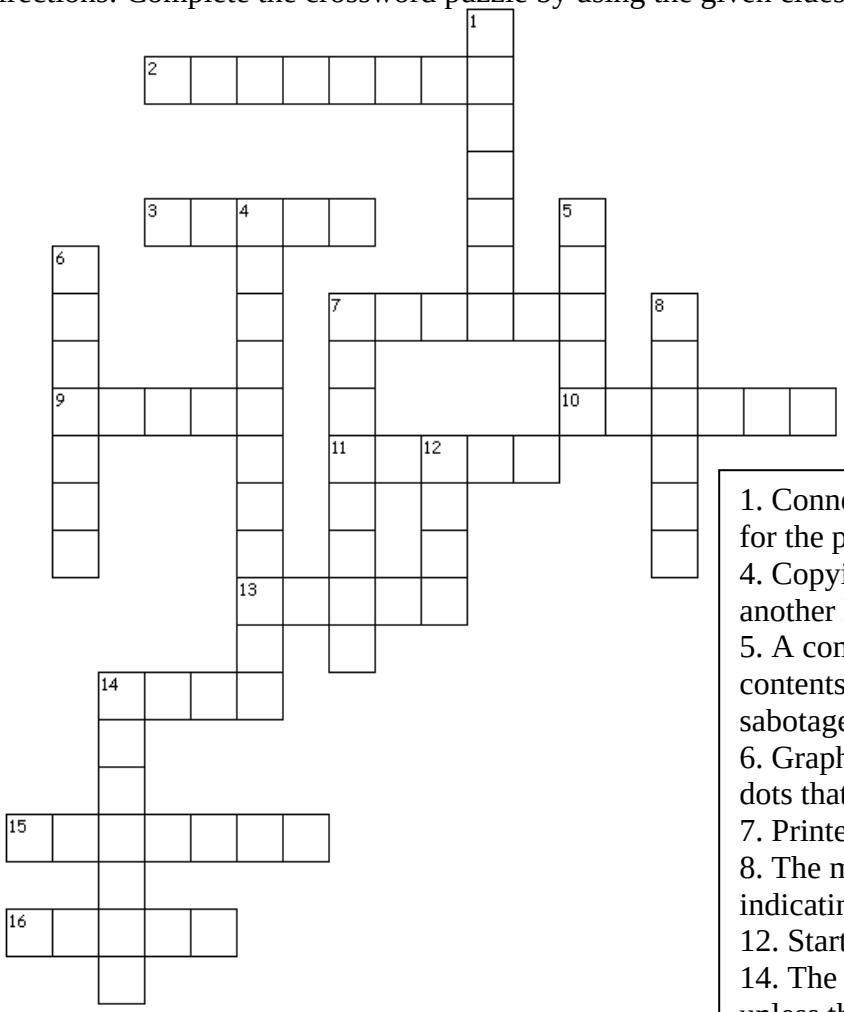
COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will be able to correctly define certain computer terms.

Computer Terminology

Directions: Complete the crossword puzzle by using the given clues.



Down

1. Connecting several computers together for the purpose of sharing information
4. Copying a file from one computer to another location
5. A computer program that can destroy the contents of a hard or floppy disk; a form of sabotage
6. Graphic images created by a series of dots that are used in desktop publishing
7. Printed output
8. The marker on the display screen indicating where the next character will be
12. Starting up a computer system
14. The option a software program defers unless the user specifies otherwise

ACROSS

2. All computer programs
3. Computer equipment that sends signals transmitted over telephone lines from one computer to another
7. A computer enthusiast who is challenged by the practice of breaking computer security measures
9. Fine dots that make up a picture
10. To move a portion of a working document off of the screen either horizontally or vertically
11. To locate and correct an error in a program
13. Entering data into the computer
14. To press the mouse button, move the mouse to the location desired, and then release the mouse button
15. A hardware device used in desktop publishing to capture images to be inserted in a document
16. The inside of a disk is made of this

COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this assignment, the student will be able to use their knowledge to create an imaginative composition on the future of computers.

The Future of Computers

Directions: Computers are making vast changes in the way we live, work, and play. Computers are now in every household appliance, toys and certainly, they are in all places of work. Almost all of our lives have been touched in some way by computers.

Write three separate paragraphs about computers. In the first paragraph, describe how computers will affect your life at home in the year 2050. In the second paragraph, describe how computers will affect your leisure time in the same year. Then in the third paragraph, describe how computers will affect your place of work in the year 2050. When you have finished combine your three paragraphs into a composition describing for your teacher what your imagination says your life will be like in the year 2050 with computers. Use your imagination!! Be creative!!

COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will recognize some of the uses of computers in the workplace.

Computers in the Workplace

Directions: Interview at least three people who are employed in different jobs. Find out how computers are used in each person's work. Share your findings in a class discussion. To help organize your data, use the chart on this sheet.

TYPE OF JOB	TYPE OF EMPLOYER	USES OF COMPUTER

COMPUTER APPLICATIONS

Name _____

Learning Objective: Upon completion of this activity, the student will have experience answering a job advertisement.

Answering a Job Advertisement

Directions: Read the paragraph below about answering a job advertisement and write at least two pages if handwritten, or one page typed. It must be single-spaced with twelve point Times New Roman font if typed.

Perhaps many times during your work life you will look for a job by answering an advertisement. Some ads ask that you stop by and fill out an application. Others want you to write to them, telling them about yourself and your qualifications. Your letter then becomes an advertisement for yourself and your abilities.

For this activity, you will write a letter answering a job advertisement. You may do it one of two ways. You may put all the information requested in the letter itself, or you may write a short introductory letter and put your work history in a resume. (A resume is a formal listing of facts about your education and jobs you have had.)

Remember, you are "selling" your abilities to an employer. Keep the following in mind:

- Put yourself in the employer's place. What would you be interested in if you had to hire someone for the same job?
- What is the benefit to the employer who hires you? What can you do that makes you a good choice?
- The employer who reads this letter will not have a chance to meet you first. He or she will not know in advance what a terrific person you are. Your letter will be your representative. What will it say about you to the reader? Of course, it will be filled with facts, but how will it look? Will it be neat or sloppy? Will it be filled with mistakes? Will it be friendly and confident or cold and uncertain? Here's the advertisement you must answer:

Help Wanted: Computer Applications Expert for Space Station

The National Aeronautics and Space Administration is seeking computer applications workers of all kinds to work on board its planned space station. If you have some experience in computer applications, either in school or on the job, we'd like to talk to you.

Workers will live on board the space station for one year. Salaries are comparable to those on earth, plus room and board. The space station operates around the clock, and all shifts are available.

Please write, giving your work background and education. Tell us what job you'd like and why you'd be interested in working on the station. Reply to: Captain J. L. Picarde, NASA recruitment, 1007 Galaxy Dr., Your Town.

COMPUTER APPLICATIONS
NAME _____

Learning Objective: Upon completion of this activity, the student will have experience writing a business letter.

COMPUTER APPLICATIONS: Final Letter

Directions: You have completed the Computer Applications unit. You will now write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name)

First paragraph- Explain what you enjoyed or did not enjoy about computer applications.

Second paragraph- Explain three important things that you learned.

Third paragraph- Discuss what more you would have liked to learn.

Sincerely,

Your Signature
Type your name under your signature.

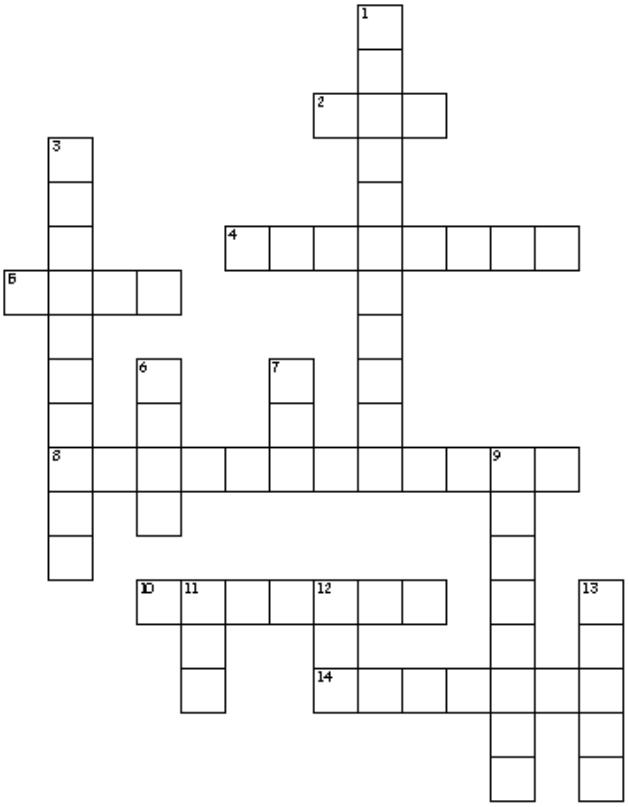
COMPUTER APPLICATIONS

Name_____

Performance Objective: Upon completion of this activity, the student will be able to correctly define certain computer terms.

Computer Terminology

Directions: Complete the crossword puzzle by using the given clues.



Across

2. The part of a computer that processes data into useful information
4. The physical parts of a computer system
5. Facts that are put into the computer
8. Equipment that receives information from the CPU: printer
10. Software that contains a set of instructions that the computers follows
14. Output device that resembles a television screen

Down

1. Any device that is used to get information into a computer: keyboard
3. Code based on the binary number system that the computer can understand
6. An information unit made up of eight bits
7. The smallest piece of information that a computer can use
9. Programmable, electronic device that calculates, stores and processes information
11. Permanent memory that cannot be deleted or changed
12. Memory that is lost when the computer is turned off
13. A destructive computer program that "infects" the computer system and can cause damage to data in the system

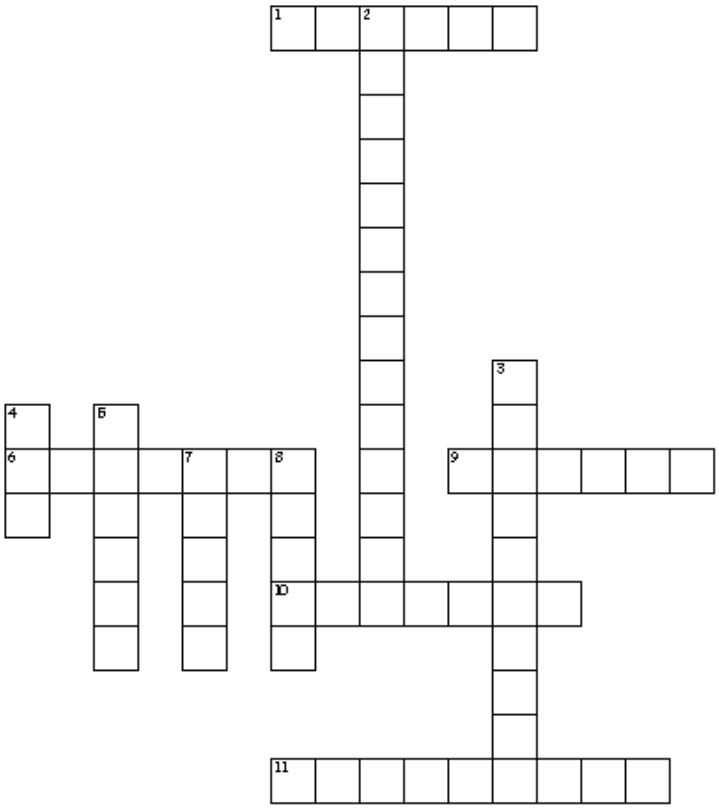
COMPUTER APPLICATIONS

Name_____

Performance Objective: Upon completion of this activity, the student should be able to identify some general facts in the history of computers.

Computer History

Directions: Complete the crossword puzzle by using the given clues.



Across

1. The first mass-produced computer
6. Invented a machine that can perform complicated calculations by following a set of instructions
9. Invented the first adding machine in 1624
10. Steven Jobs and Stephen Wozniak designed and assembled this in 1977
11. Computer on a stick

Down

2. A tiny chip that contains dozens of electronic components
3. An electronic device that runs cooler, uses less power, and works faster than the vacuum tube
4. International Business Machines
5. A mechanical computer that uses beads to represent numbers
7. Harvard professor built Mark I computer in 1944
8. The first electronic computer, used vacuum tubes instead of switches

COMPUTER APPLICATIONS

Name_____

Learning Objective: Upon completion of this activity, the student will be able to identify some general facts about computers.

Information Resources

Directions:

3. Matching: Match each item in the left-hand column with the correct description from the right-hand column. Write the letter of the correct description in the space provided.
4. True- False: On the line beside each statement, write **True** if the statement is correct and **False** if the statement in incorrect.

MATCHING

_____1- input	a. Computer linked to a central controlling computer
_____2- program	b. The computer's brain
_____3- central processing unit	c. Information placed in a computer
_____4- output	d. Information that has been processed by a computer
_____5- network	e. Computer station
_____6- terminal	f. Set of computer instructions

TRUE- FALSE

_____7- Data processing systems organize raw data into information.

_____8- A keyboard is the only input device for computers.

_____9- Computer output can be in the form of a display on a monitor screen.

_____10- Computer data is usually stored in documents and books.

_____11- All computers contain at least four basic parts.

_____12- Communication, transportation, production, and biotechnology all depend on information resources.

_____13- A data processing system can only organize information in one form.

_____14- It is impossible for an information system to collect, organize, store, and send information.

_____15- The central processing unit of a computer carries out the instructions provided by the operator through an input device.

DESKTOP PUBLISHING

DESKTOP PUBLISHING UNIT

Upon completion of the activities in this unit, students will:

- Be able to compare and contrast desktop publishing and typesetting.

- Be able to apply knowledge of design and layout elements.

- Have knowledge of the history of desktop publishing.

- Possess knowledge of terminology related to desktop publishing.

- Be able to apply their knowledge of various design and layout elements to design and create an original brochure.

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of the activity, student will complete a paragraph on the history of desktop publishing using a list of provided terms.

History of Desktop Publishing

Directions: Fill in the blanks.

_____, a term coined by _____, is the use of a _____ and specialized _____ to combine _____ and _____ to create a document that can be printed on either a _____ or a typesetting machine. This combination of a computer and software allows users to: compose complete documents of original text and illustrations without _____ ____and_____, eliminate many of the manual steps, and easily manipulate both text and graphics. The documents produced by desktop publishing rivaled _____in quality and revolutionized the graphics and the _____ _____ overnight.

The first software designed for desktop publishing was _____. Paul Brainerd of the Aldus Corporation, created the software for the newly released Apple Macintosh in the early 1980's. Since its introduction in the _____, desktop publishing has been one of the fastest growing segments of the computer industry.

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of the activity, student will complete a paragraph on the history of desktop publishing using a list of provided terms.

History of Desktop Publishing

Directions: Fill in the blanks.

Desktop Publishing, term coined by *Paul Brainerd*, is the use of a *computer* and specialized *software* to combine *text* and *graphics* to create a document that can be printed on either a *laser printer* or a typesetting machine. This combination of a computer and software allows users to: compose complete documents of original text and illustrations without *cutting and pasting*, eliminate many of the manual steps, and easily manipulate both text and graphics. The documents produced by desktop publishing rivaled *phototypesetting* in quality and revolutionized the graphics and *printing industry* overnight.

The first software designed for desktop publishing was *Pagemaker*. Paul Brainerd of theAldus Corporation, created the software for the newly released Apple Macintosh in the early 1980's. Since its introduction in the *mid-1980's*, desktop publishing has been one of the fastest growing segments of the computer industry.

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon the completion of this unit students will be able to understand the history of desktop publishing.

History of Desktop Publishing

Directions: Desktop publishing started in the mid 1980's. With this in mind, research the history of desktop publishing and the impacts that it has had in the world of communication. Then write a paragraph describing what you have researched.

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon the completion of this unit students will be able to distinguish between desktop publishing and typesetting.

Desktop Publishing versus Typesetting

Directions: Research the terms desktop publishing and typesetting. Using this research answer the following questions.

1) What is typesetting?

2) What is desktop publishing?

3) How are desktop publishing and typesetting different?

4) What does the acronym WYSIWYG stand for?

5) What was the name of the first software package used on McIntosh computers that allowed the easy integration of text and graphics into a single document?

6) What type of education would one need to gain employment as a desktop publisher?

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of this activity, students will have shown understanding of terminology by matching the word to the correct definition.

Matching

Directions: 1. Match the word to its definition. 2. Categorize elements into different areas: elements of design and principles of design.

1.)

____ 1. Line	A. relationship between elements in an image
____ 2. Shape	B. what get noticed first
____ 3. Texture	C. measure of volume that adds definition to shapes
____ 4. Size	D. equal distribution of weight
____ 5. Emphasis	E. varied any mark connecting two points
____ 6. Balance	F. the look and feel of a surface
____ 7. Rhythm	G. How large or small an object is.
____ 8. Unity	H. anything that has height and width
____ 9. Mass	I. elements that look like they all belong
____ 10. Contrast	J. variation of elements in a printed product
____ 11. Proportion	K. a pattern created by repeating elements

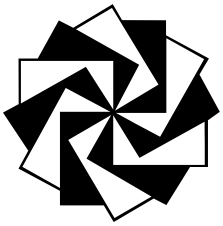
Elements of Design Principles of Design

DESKTOP PUBLISHING
Name _____

Learning Objective: Upon completion of this activity, students will have used illustrations to best define design terminology.

Fill in the Blank

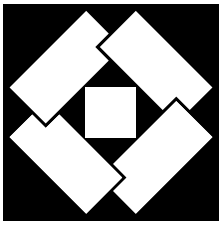
Directions: Write the design element(s) that best describes the picture.

1. 

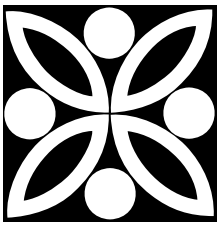
_____

2. 

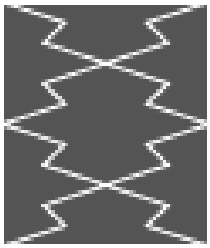
_____

3. 

_____

4. 

_____

5. 

_____

6. 

_____

7. 

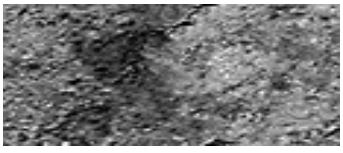
_____

8. 

_____

9. 

_____

10. 

_____

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of this activity, students will have exercised their understanding of terminology by defining the following words.

Desktop Publishing Terminology

Directions: Using complete sentences, define each word.

1. Line -

2. Shape-

3. Texture-

4. Size-

5. Emphasis-

6. Balance-

7. Rhythm-

8. Unity-

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon the completion of this unit students will be able to distinguish between formal and informal balance.

Balance

Directions: Define the two terms then create two different flyers with your desktop publishing software that portrays the two terms.

Formal Balance:

Informal Balance:

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of this activity, students will understand the elements of layout.

Layout Elements

Directions: Define the different elements of layout s and explain their functions.

1. Body Type

2. Display Type

3. Illustrations

4. White space

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of this activity, students will have designed a brochure about themselves using various design elements and layout techniques.

Design a Brochure

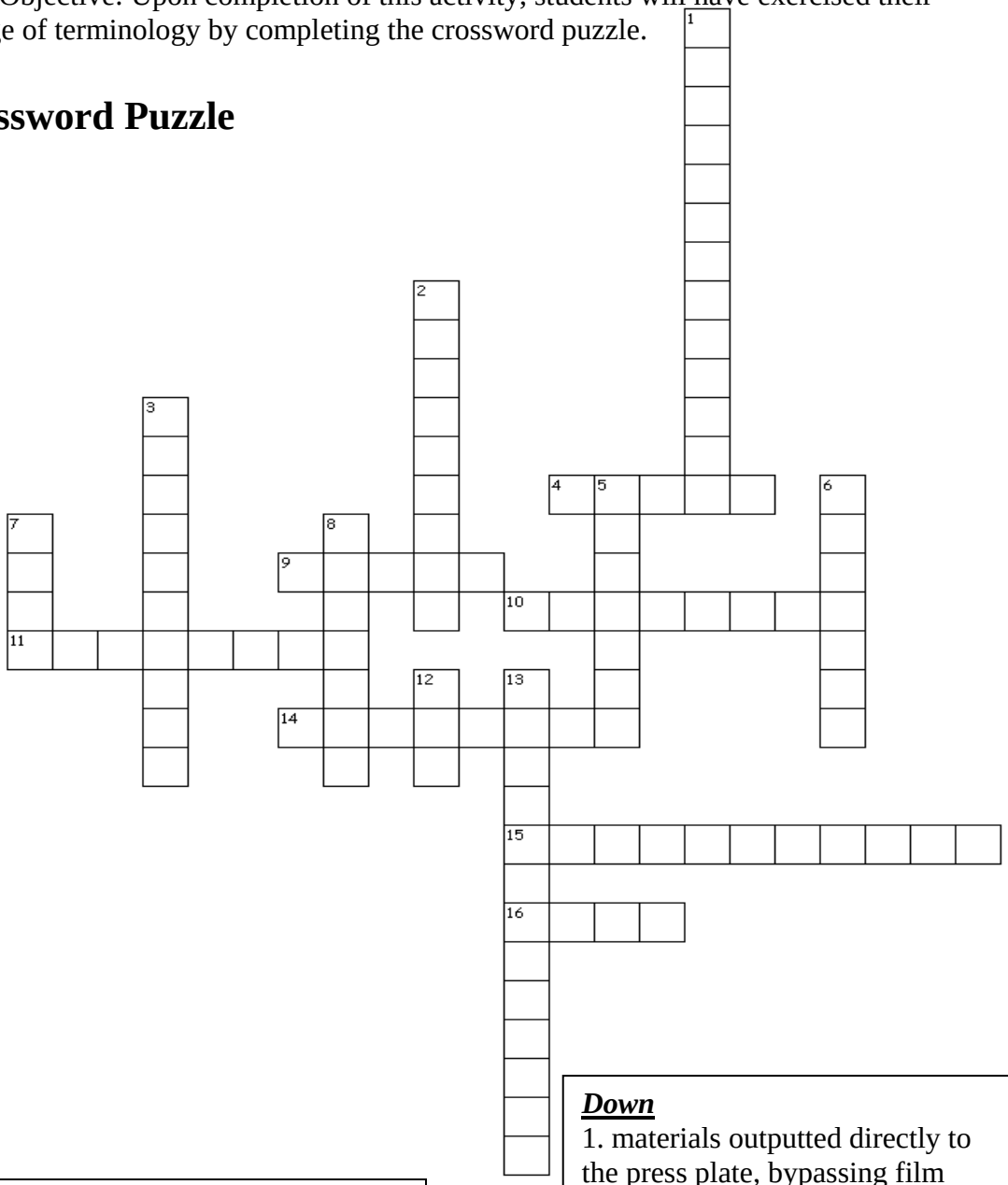
Directions: Design a Brochure about yourself, incorporating various design elements. Use the below space to rough sketch the layout of your brochure.

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of this activity, students will have exercised their knowledge of terminology by completing the crossword puzzle.

Crossword Puzzle



Across

4. color extended past margins
9. one page advertisement
10. pamphlet bound in booklet form
11. text position in reference to graphics
14. pictorial representations
15. materials ready to be shot to film
16. words

Down

1. materials outputted directly to the press plate, bypassing film
2. pictures broken into dots
3. page positioning
5. drawings or sketches of proposed printed pieces
6. copy containing no halftones
7. typestyle
8. artwork
12. For Positioning Only
13. materials outputted directly to press, bypassing film and plating

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of this activity, students will have exercised their knowledge of terminology by completing the word scramble and defining the words.

Word Scramble

Directions: 1. Unscramble the below terms. 2. Define each term.

NOFRIMLA AECABNL

YDBO PEYT

SYDPILA YTPE

TAIROTSINLSLU

HIWET CESPA

TOROPIONRP

ROAMLF ABCNLAE

NILE

PEASH

TUETERX

SIEZ

SEHMIPSA

CALNABE

HTHYRM

NUTIY

DESKTOP PUBLISHING

Name _____

Learning Objective: Upon completion of this activity, students will have knowledge of several specialty fields regarding desktop publishing.

Career Research

Directions: Research 5 of the desktop publishing careers listed on http://desktoppub.about.com/compute/desktoppub/library/weekly/aa011300a.html. After each description is read, choose the top 3 specialties you feel you would be most interested. Write a summary of your top three choices in top ranking order explaining your answer.

1. Annual Reports, Proposals
2. Business Forms
3. Catalogs, Menus, Product Lists
4. Collateral Materials (brochures, fliers, posters)
5. Corporate Identity (logos, letterhead)
6. Crafts, Creative Printing
7. Marketing Materials (ads, direct mail)
8. Periodicals (newsletters, newspapers, magazines)
9. Packaging
10. Presentation Graphics
11. Publication Art (book jackets, cd inserts)
12. Publications (books, manuals)
13. Resumes, Word Processing
14. Self-Publishing
15. Signage
16. Web and Electronic Publishing (web sites, multimedia, pdf)

Choice Number 1 -

Choice Number 2 -

Choice Number 3 –

DRAFTING /CADD

DRAFTING/CADD UNIT

Upon completion of the activities in this unit, students will:

- improve written communication skills in the DRAFTING/CADD area.
-
- expand their technical vocabulary in the DRAFTING/CADD area.
- apply the creative and organizational skills required to write short essays.
- improve basic knowledge and use of the internet.
- practice basic research and documentation of information.

DRAFTING/CADD
Name _____

Learning Objective: Upon completion of this activity, the student will be able to identify and define the purpose of eight lines used in Drafting/CAD.

Line Identification and Purpose

Directions: Listed below are eight different line types used in mechanical drawing/CAD. Define each line type using complete sentences. Next to your definition, sketch an example of each type of line.

1. Hidden Line

2. Dimension Line

3. Section Line

4. Center line

5. Object Line

6. Cutting Plane Line

7. Border Line

8. Extension Line

DRAFTING/CADD

Name _____

Learning Objective: Upon completion of this activity, the student will be familiar with the duties and responsibilities of a DRAFTER.

The Drafter

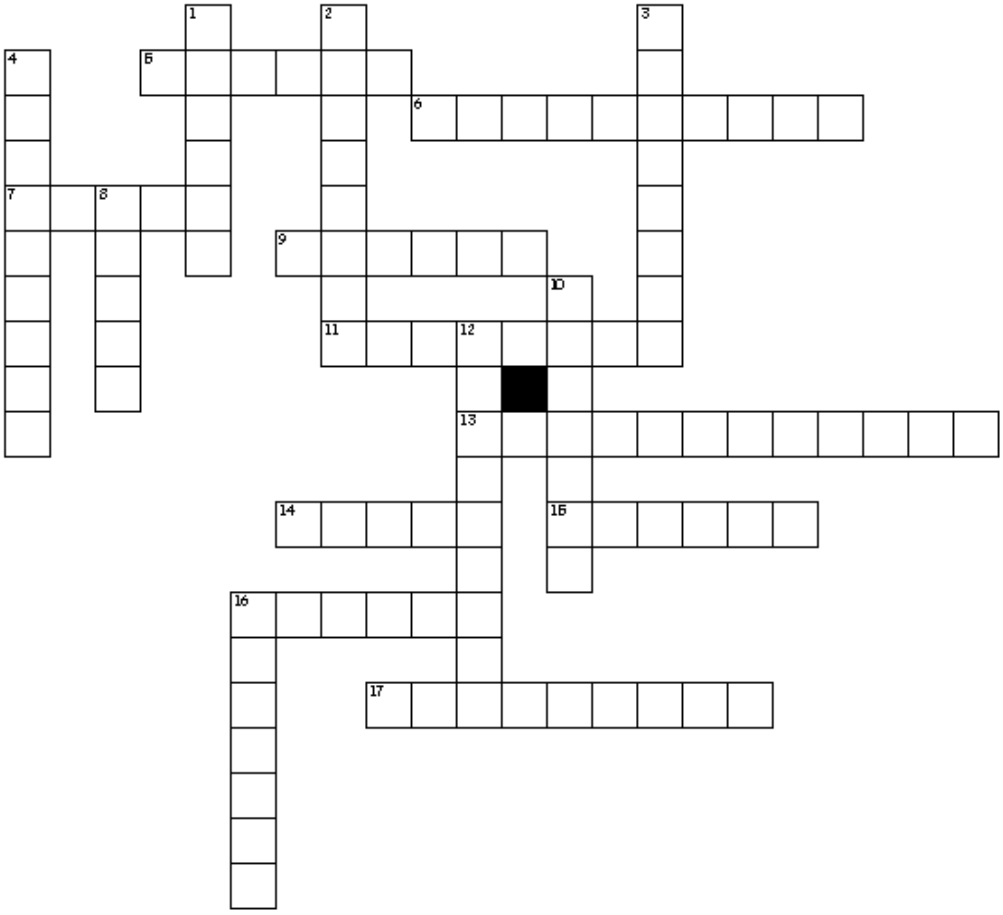
Directions: Re-write the following paragraph by using the proper words selected from the list provided below.

Drafters prepare _____ drawings and plans used by production and _____ workers to build everything from _____ products such as spacecraft or industrial machinery to structures such as _____ buildings or oil and gas _____. Their drawings provide _____ guidelines, showing the technical details of the products and _____, specifying dimensions, _____ to be used, and procedures and _____ to be followed. Drafters fill in technical details, using drawings, rough _____, specifications, codes, and _____ previously made by engineers, surveyors, _____ or scientists. For example, they use their knowledge of _____ building techniques to draw in the _____ of a structure. Some _____ use their knowledge of _____ and manufacturing theory and standards to draw the _____ of a machine in order to determine design _____ such as the number and kind of _____ needed to assemble it. They use technical _____, tables, calculators and _____ to do this.

calculations	parts	construction
handbooks	structures	technical
computers	pipelines	engineering
architects	fasteners	manufactured
sketches	elements	office
visual	materials	standardized
details	processes	drafters

DRAFTING/CADD

NAME _____



Across

5. THIS LINE REPRESENTS UNSEEN OBJECT LINES
6. USED TO LAY OUT ANGLES
7. TO MAKE MODIFICATIONS

Down

1. INSIDE CORNER
2. A PATTERN FOR REPEATED USE
3. FROM SIDE TO SIDE THROUGH THE CENTER
4. SHOWS MEASUREMENT
8. MIGHT BE 15, 30, 45, ETC.
10. THIS VIEW SHOWS A CUT-

9. HALF OF THE DIAMETER
11. DESIGNS NEW PRODUCTS
13. USUALLY CONTAINS THREE OR MORE VIEWS
14. USED TO MEASURE WITH
15. A LINE REPRESENTING PART
OF THE ITEM DRAWN
16. WHERE YOU MIGHT PLACE YOUR
DRAWING ON PAPER
17. DESIGNS BUILDINGS AND OTHER STRUCTURES

DRAFTING/CADD

NAME _____

Directions: Find the words from the list below.

R R C B F P X V F N M L D Y A B Q M N G
I O C O C H C M Y X P N U S R X Z O V G
D I M E N S I O N A U M T C O J I N L B
C E C O M P A S S O R E B E T T H M I X
P I F F T I Q N R R M C D S C Y S H Q I
J C H Y I H W E V P L W H E A C M U K D
S L R P R L Z E L A I Y S I R A P K T T
K K T Z A I L A N E D D I H T X F F T A
Z U O E T R T E R F L T N V O E A D C I
B J W I G E G X T E G J I O R S C E E X
M M G P P P C O U A T L S U P J F T J M
C I A L H E I Q H B N E O T I H E A B Y
D R E E N I G N E T I H M Q Q E L I O H
J L S T A B F R I L R L E A B G G L A E
X B E U X T P W X Q J O T L I U N K C J
V R Z Q I S C A L E L T R B F D A I P E
C K J H R D X H M O J W I C A G I T V S
V J M S G D A J P A P V C Z R H R Y F O
F O G B J P Y R W N N L W I C Y T S R M
R G H K Z R M R U J G C M Q R I Q Z K D

ARCHITECT	ISOMETRIC
CENTER	OBJECT
COMPASS	ORTHOGRAPHIC
DETAIL	PROTRACTOR
DIAMETER	RADIUS
DIGITIZER	ROUND
DIMENSION	SCALE
ENGINEER	SECTION
FILLET	TEMPLATE
HIDDEN	TRIANGLE

DRAFTING/CADD

Name _____

Learning Objective: The student will choose, research and write a short essay on a specific Drafting/CADD career.

Drafting/CADD Career Opportunities

Directions: Listed below are several career opportunities related to Drafting/CADD. Choose one that you may wish to explore further. Use your school library, city library, the internet or knowledgeable persons to research and collect as much data as possible about your selected interest. Then, write a three paragraph essay explaining your findings. Use the model below.

1st paragraph – introduce career
2nd paragraph – summarize information
3rd paragraph – conclusion

1. Industrial Designer
2. Tool Designer
3. Teacher
4. Engineer
5. Architect
6. Model Maker
7. Technical Illustrator

DRAFTING/CADD

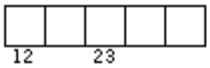
Name _____

Learning Objective: The student will expand basic knowledge of drafting terms.

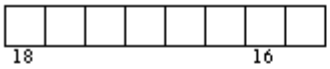
DRAFTING/CADD VOCABULARY

Directions: Unscramble each clue word. Place the numbered letters in the message below.

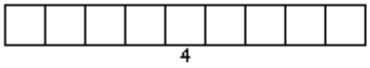
CASLE



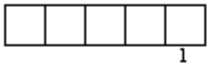
LEPMEATT



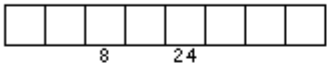
RIZTEGIDI



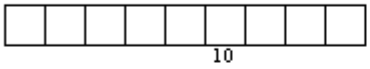
AERES



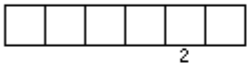
GEENINRE



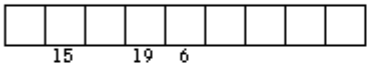
NOEDINIMS



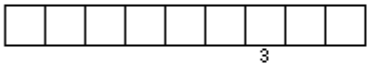
RNETCE



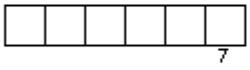
CAITERHCT



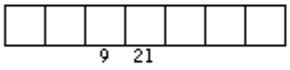
MIRTIOCSE



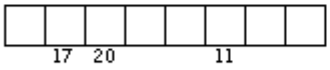
DEDHIN



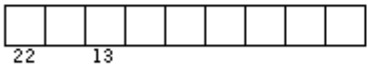
COSMASP



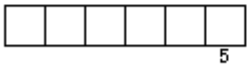
TEDMAREI



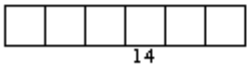
LENRETIGT

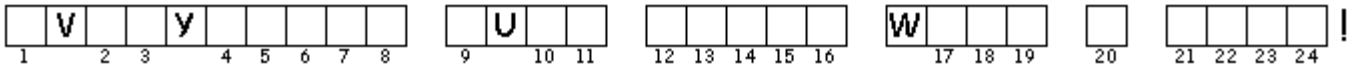


HTSEKC



TAILED





DRAFTING/CADD
Name _____

Learning Objective: Upon completion of this activity, the student will be familiar with the duties and responsibilities of an Architect.

The Architect

Directions: Re-write the following paragraph by using the proper words selected from the list provided below.

Architects _____ buildings and other _____. The design of a _____ involves far more than its appearance. Buildings must also be _____, safe and economical, and must suit the _____ of the people who use them. _____ take all these things into _____ when they design buildings and other structures. Architects provide _____ services to individuals and _____ planning a construction _____. They may be involved in all _____ of development from initial discussion with the _____ through the entire _____ process. Their duties require specific skills – designing, engineering, _____, supervising, and _____ with clients and builders.

Client	Design	Communicating
Needs	Project	Architects
Managing	Structures	Phases
Building	Consideration	Professional
Construction	Organizations	Functional

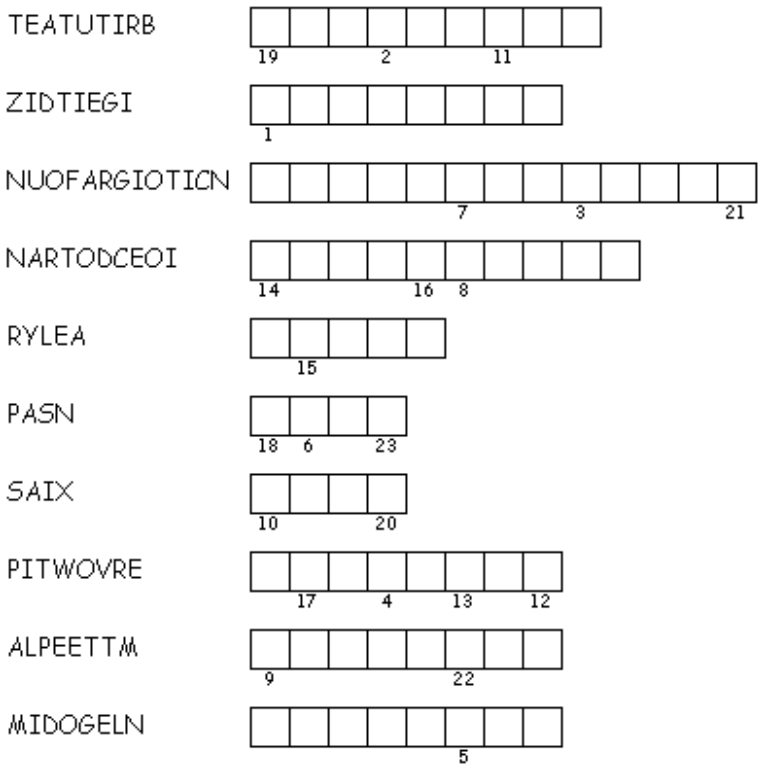
DRAFTING/CADD

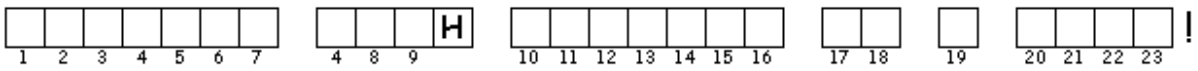
Name _____

Learning Objective: The student will expand basic knowledge of AutoCAD terms.

AutoCAD VOCABULARY

Directions: Unscramble each clue word. Place the numbered letters in the message below.





DRAFTING/CADD

Name _____

Learning Objective: The student will research and record information on a distinguished architect.

Louis Sullivan	Frank Lloyd Wright
William Jay	**Gordon W. Lloyd**

Directions: Use your school library, city library, the Internet or knowledgeable persons to research and collect as much data as possible about one of these persons. Then, write a two- page essay summarizing your findings. Include information that describes their contributions as an architect.

DRAFTING/CADD

Name _____

Learning Objective: The student will describe or narrate a tour of his or her perception of the perfect home.

Your Dream House

Directions: You have the opportunity, with unlimited resources, to build any home that you desire. Begin by making a list of the various rooms in the house. Then write a two to four page description of your perfect dwelling.

DRAFTING/CADD

Name _____

Directions: Find all of the world renowned architects from the list below.

Extra Credit: List the location and most famous works of a selected architect.

Q P V M K D S T E N E E Z R P

B J J J E I H O O O I D C E L

S F M O O G H S L C H S K I E

S U H S I U R C Q E G S N S C

R R L R U E L Q V S R B Y U N

E I W L F P A L L A D I O B I

L A V F I M G T B U H T O R C

L C E W G V H Y I F F C G O K

U J H D H O A R S I J X R C F

F N M T M I R N W A H S R A P

Z M E S D R A M I U G R E S W

G R O X U O J J H O R I V Q K

R N S S M Y A Q Y P F F T L Y

M O R G A N Y Z S S G B P R X

H J Y K I Z G J E O J S G W A

ARTIGAS	CORBUSIER	FULLER
GUIMARD	JAY	JEFFERSON
MORGAN	PALLADIO	PLECNICK
SOLERI	SULLIVAN	THOMSON
WARCHAVCHIK	WRIGHT	

DRAFTING/CADD

Name _____

Learning Objective: The student will write several short paragraphs concerning patents.

WWW.USPTO.GOV

Directions: On your WEB browser, type in www.uspto.gov. This is the home page for the United States Patent and Trademark Office. Click on the "PATENTS" hyperlink. Click on and read the section "How to apply for a patent". Then, in your own words, write a paragraph explaining the process. Be sure to explain why drawings are required for patents.

Extra Credit: Select a particular patent that you are curious about and print out the associated drawing(s).

DRAFTING/CADD

Name _____

Learning Objective: The student will use the Occupational Outlook Handbook on the internet to research and explore a career in Drafting/CADD.

Occupational Outlook Handbook

Directions: Using your WEB browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm) If this address does not work, use a search engine to locate the current address. Use the handbook to research information on Drafting/CADD careers. Select one career and summarize your findings in a two-page report. The report should include information on the following:

1. Nature of the work
2. Working conditions
3. Employment
4. Training and qualifications
5. Job outlook
6. Earnings
7. Related occupations

DRAFTING/CADD

Name _____

Learning Objective: The student will create a business letter summarizing the Drafting/CADD unit.

Drafting/CADD Summary

Directions: You have completed the Drafting/CADD unit. Write a letter to your instructor, in business format, following the guide provided below.

Your Street Address
City, State, Zip Code

Date
Your Teacher's Name
Your School's Name
Your School's Address
City, State, Zip Code

Dear (Teacher's Name),

First Paragraph - Explain at least three important things you learned.

Second Paragraph - Explain why you did or did not enjoy this unit.

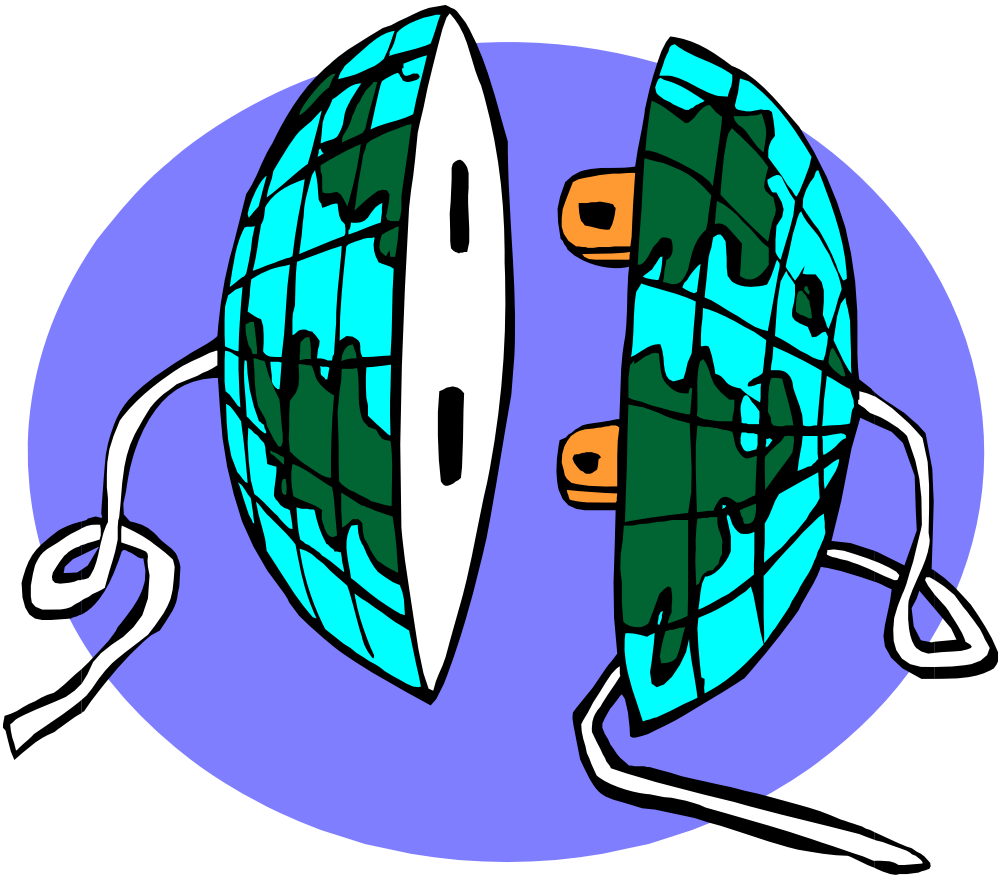
Third paragraph – Discuss how the unit might be improved and/or expanded.

Sincerely,

Your Signature

Type your name here

ELECTRICITY
&
ELECTRONICS



ELECTRONICS UNIT

Upon completion of the activities in this unit, students will:

- improve written communication skills in the ELECTRONICS area.
-
- expand their technical vocabulary in the ELECTRONICS area.
- apply the creative and organizational skills required to write short essays.
- improve basic knowledge and use of the internet.
- practice basic research and documentation of information.

ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: Upon completion of this activity, the student will be acquainted with basic procedures for using and working with electricity.

Electricity/Electronics Safety

Directions: Re-write the paragraph below by using the proper words selected from the list provided below.

In the high tech, _____ age, most of us have _____ the mild tingle of a minor electric _____. Although a mild shock is harmless, _____ can be very _____ if not treated with respect. There are many _____ involved in the cause and effect of an electric shock. Three factors which affect the _____ of a shock are the _____ of current, the path which the electricity takes through the body and the duration of contact. As little as one milliamp, (.001 amps), can stop a human _____ if it finds a path to travel there. Electricity can cause involuntary muscle _____ which may make it impossible to _____ a wire which is shocking you through your hand. Always treat electricity with great _____. Turn off all power to any item you are working on. A good rule for electronics _____ is to keep one hand in their _____ when using the other one to make electrical measurements. In this manner, you will not create a _____ for electricity from one hand to the other.

contraction	shock	release
heart	dangerous	technicians
electronics	respect	experienced
amount	electricity	severity
path	factors	pocket

ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: The student will research and record definitions and symbols for electronics components.

Electronics Components

Directions: Use your textbook or another resource book to write a short description of the function and/or operation for each of the electronics components listed below. After the description, draw the schematic (wiring diagram) symbol for each component.

1. Resistor

2. Capacitor

3. Fuse

4. Switch

5. Inductor

6. Transformer

7. Battery

8. Diode

9. Transistor

10. Relay

ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: The student will choose, research and write a short essay on a specific Electricity/Electronics career.

Electricity/Electronics Career Opportunities

Directions: Listed below are several career opportunities related to electricity/electronics. Choose one that you may wish to explore further. Use your school library, city library, the internet or knowledgeable persons to research and collect as much data as possible about your selected interest. Then, write a three -paragraph essay explaining your findings. Use the model below.

1st paragraph – introduce career
2nd paragraph - summarize information
3rd paragraph – conclusion

1. Electronics Engineer
2. Electronics Technician
3. Computer Repair Technician
4. Electrician
5. Teacher
6. Electro-Mechanical Technician

ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: The student will write a short essay concerning our dependence on electricity/electronics using the provided word list.

Electrical/Electronic Devices

Directions: Write a one- page essay supporting the opinion that Americans have become very dependent on electricity and electronics in their daily lives. Use all the words provided in the list below.

toaster	television	refrigerator	stereo
microwave	cable	light	heater
alarm	washer	dryer	mixer
oven	circuit breaker	walkman	blow dryer
water heater	air conditioning	video games	telephone
computer	facsimile	stove	clock

ELECTRICITY/ELECTRONICS

Name_____

C U R R E N T G S U R D R G T

O U L K S S X C J K O E A N R

Z S D E A E H A R Q T S N I A

T N C F A E R O Z E C T A R N

V H E I M D T I M S U T L E S

G T P A L A R O E E D A O D I

Y J T P R L I E D S N W G L S

H I M E U T A O I F O E E O T

C G N T N D I T N F C M E S O

P E I E Y D Q A O V I G N K R

G Z T R O T O M G R M L M T M

H O O H M S X Z M O E O P Y F

P L L E C O T O H P S W V M K

T R A N S F O R M E R S O E A

K U I C J W N U Z D Q T K P M

AMPLIFIER	ANALOG	CURRENT
DIODE	GENERATOR	LEAD
MOTOR	OHMS	OSCILLATOR
PHOTOCELL	POTENTIOMETER	POWER
SAFETY	SCHEMATIC	SEMICONDUCTOR
SERIES	SOLDERING	TRANSFORMER
TRANSISTOR	WATTS	

ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: The student will use the Occupational Outlook Handbook on the internet to research and explore a career in Electricity/Electronics.

Occupational Outlook Handbook

Directions: Using your WEB browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm) If this address does not work, use a search engine to locate the current address. Use the handbook to research information on Electricity/Electronics careers. Select one career and summarize your findings in a two-page report. The report should include information on the following:

1. Nature of the work
2. Working conditions
3. Employment
4. Training and qualifications
5. Job outlook
6. Earnings
7. Related occupations

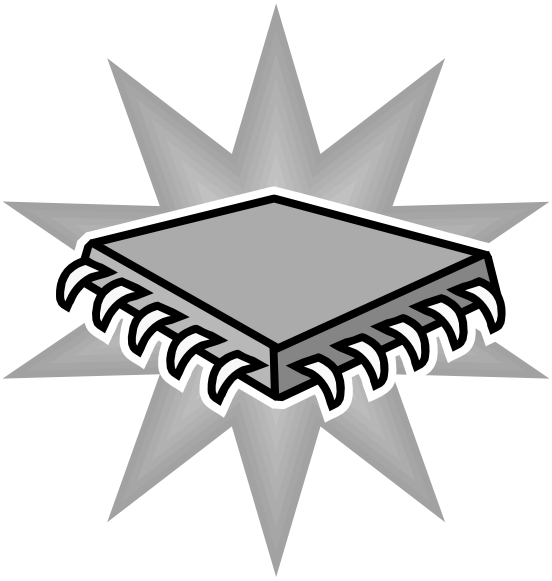
ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: The student will use the Internet to research an electronics product and write a short essay describing the product's construction and operation.

ELECTRONICS PRODUCTS

Directions: In the address line on the WEB type in www.howstuffworks.com. Browse and select an electronics product that you are interested in. Write a one- page essay about the product's construction, operation, etc.



ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: Upon completion of this activity, the student will be familiar with the duties and responsibilities of an Engineering Technician.

Engineering Technicians

Directions: Re-write the following paragraph by using the proper words selected from the list provided below.

Engineering _____ use the principles and _____ of science, engineering, and _____ to solve technical problems in research and _____, manufacturing, sales, _____, inspection and maintenance. Their work is more _____ in scope and more _____ oriented than that of scientists and _____. Many _____ technicians assist engineers and _____, especially in _____ and development. Others work in _____ control – inspecting products and _____, conducting tests, or _____ data. In manufacturing, they may assist in _____ design, development, or production.

Collecting	Development	Practically
Theories	Engineers	Mathematics
Technicians	Product	Construction
Processes	Engineering	Scientists
Limited	Quality	Research

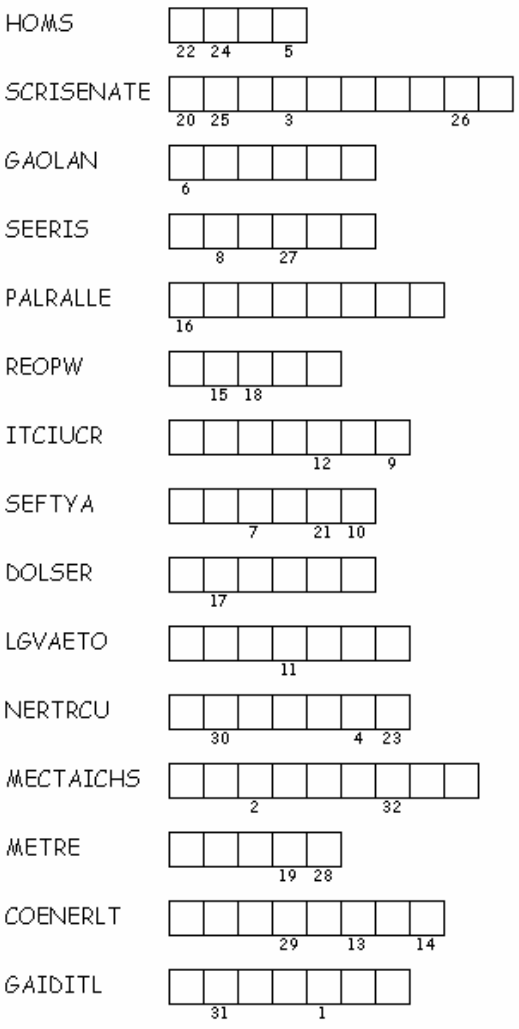
ELECTRICITY/ELECTRONICS

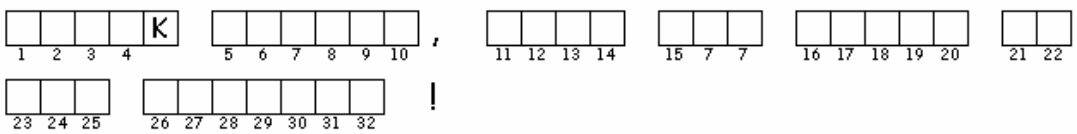
Name _____

Learning Objective: The student will expand basic knowledge of electronics terms.

ELECTRONICS VOCABULARY

Directions: Unscramble each clue word. Place the numbered letters in the message below.





ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: The student will write a one- page essay describing the most important invention in electronics.

The Most Important Invention in History

Directions: Think about all the different inventions in electricity and electronics. Which one do you think has been the most important. Why ? Write a one-page essay defending your position.

ELECTRICITY/ELECTRONICS

Name _____

Directions: The list below contains the names of ten inventors in the electronics area with names beginning with a "B". Find them in the word search below.
Extra Credit: Use the Internet or another resource to list the inventions of each person.

S Y Y Z G E W Q T G I E V R I

P H A E R N O B T B D P B M P

L J O L I O D W E M R E N Q P

B G K K P I N Q N V L T O X E

M L Y H A D X D N L J H J K N

D O A C Q V E B E R H M T I L

B X W C V S F A B B R B O R Q

V E S F K E E U E V W R U D P

R F Z A Q Z S S U V D A H M W

Y M F S L H A O Y A R T V C D

T I H M N D J E G X Y T B Y U

Z A X E B A I R D I J A O D Z

D B L W Q W A Y B B J I W I N

Z L N E E D R A B C W N E Y T

Q U Z S Y S Y V U X J R R F U

BAIRD BARDEEN

BEDNORZ

BELL BENNETT

BLACK

BOWER BUSHNELL BOYKIN

BRATTAIN

ELECTRICITY/ELECTRONICS

Name _____

Learning Objective: The student will create a business letter summarizing the Electricity/Electronics unit.

Electricity/Electronics Summary

Directions: You have completed the electricity/electronics unit. Write a letter to your instructor, in business format, following the guide provided below.

Your Street Address
City, State, Zip Code

Date
Your Teacher's Name
Your School's Name
Your School's Address
City, State, Zip Code

Dear (Teacher's Name),

First Paragraph - Explain at least three important things you learned.

Second Paragraph - Explain why you did or did not enjoy this unit.

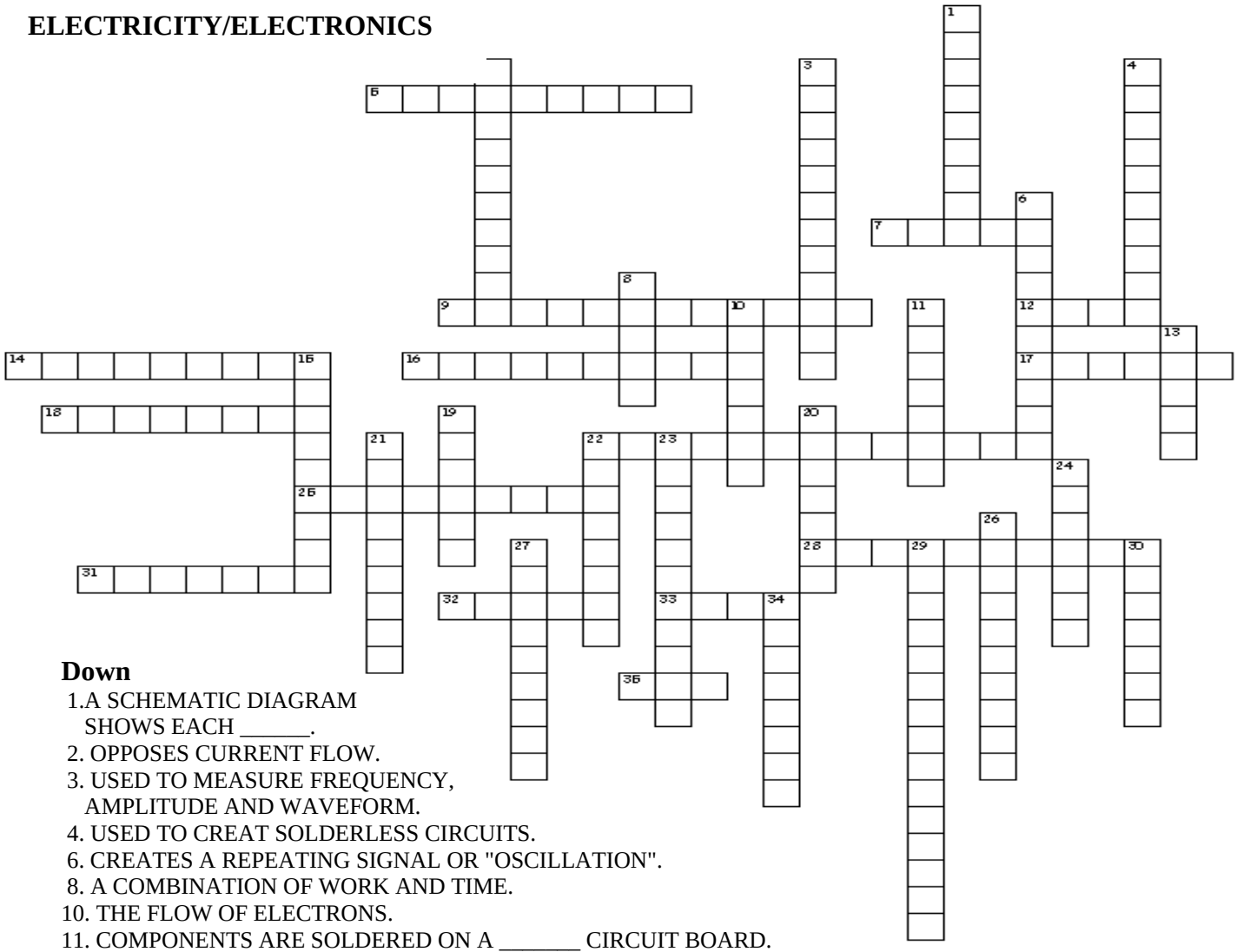
Third paragraph – Discuss how the unit might be improved and/or expanded.

Sincerely,

Your Signature

Type your name here

ELECTRICITY/ELECTRONICS



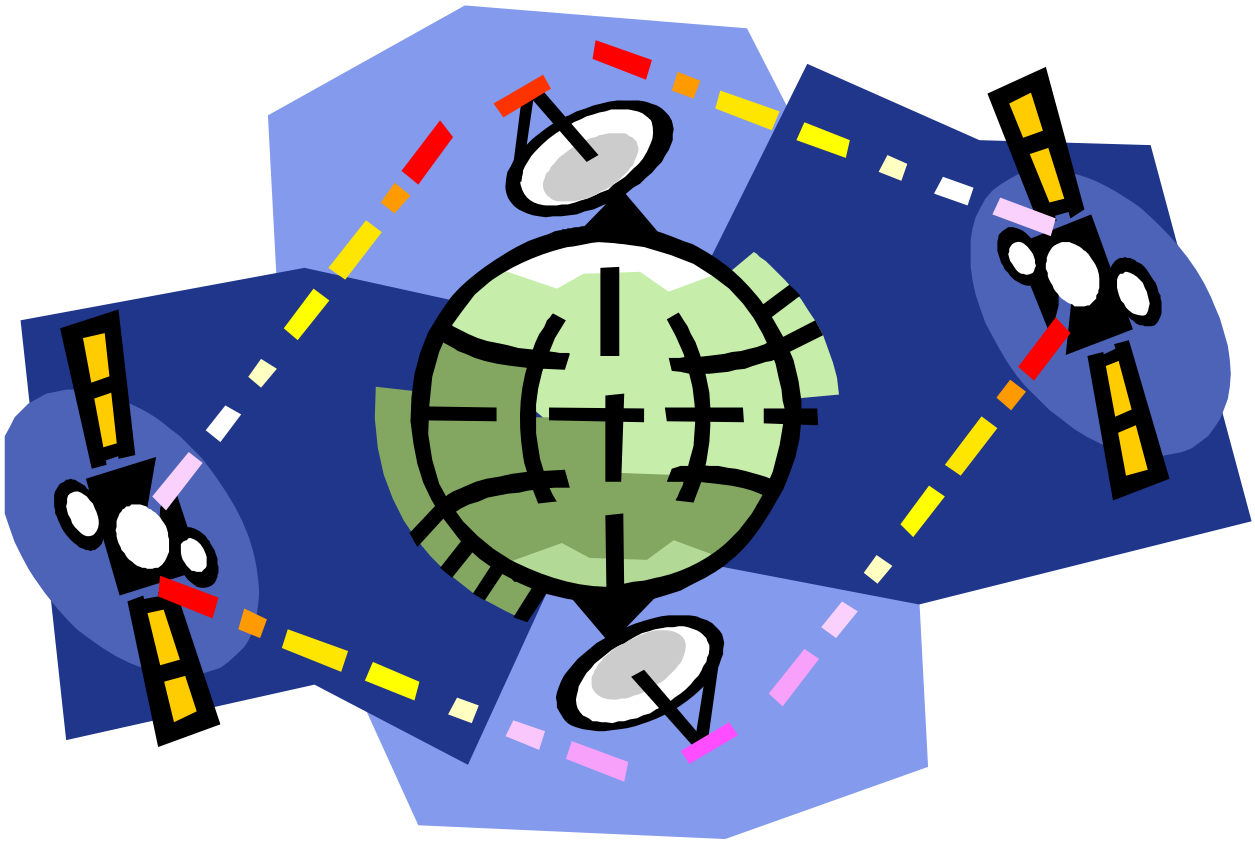
Down

1.A SCHEMATIC DIAGRAM SHOWS EACH _____.
2. OPPOSES CURRENT FLOW.
3. USED TO MEASURE FREQUENCY, AMPLITUDE AND WAVEFORM.
4. USED TO CREAT SOLDERLESS CIRCUITS.
6. CREATES A REPEATING SIGNAL OR "OSCILLATION".
8. A COMBINATION OF WORK AND TIME.
10. THE FLOW OF ELECTRONS.
11. COMPONENTS ARE SOLDERED ON A _____ CIRCUIT BOARD.
13. CONVERTS ELECTRICAL ENERGY INTO MECHANICAL ENERGY.
15. CONVERTS MECHANICAL ENERGY INTO ELECTRICAL ENERGY.
19. A _____ CIRCUIT HAS ONE SINGLE PATH.
20. A COMPLETE PATH FOR CURRENT FLOW.
21. MAY HOLD A CHARGE WHEN DISCONNECTED.
22. TWO OR MORE PATHS FOR CURRENT FLOW.
23. MAY STEP-UP OR STEP-DOWN VOLTAGE.
24. THE UNIT OF MEASURE FOR ELECTROMOTIVE FORCE.
26. USED FOR SWITCHING OR AMPLIFICATION.
27. AFFECTED BY LIGHT.
29. THE PROPERTY WHICH MAKES A MOTOR TURN IS _____ FORCE.
30. SHARP, DISCREET CHANGE IN SIGNAL.
34. USED TO REMOVE INSULATION FROM WIRE.

Across

5. A WIRING DIAGRAM WHICH USES SYMBOLS.
7. UNIT OF MEASURE FOR ELECTRICAL POWER.
9. CONTAINS FOUR VALENCE ELECTRONS.
12. CONNECTS YOUR METER TO THE CIRCUIT.
14. USING TIN, LEAD, ROSIN AND HEAT TO MAKE CONNECTIONS.
16. USED TO MEASURE CURRENT,RESISTANCE AND VOLTAGE.
17. OF STEADY OR GRADUAL CHANGE.
18. NEGATIVELY CHARGED PARTICLE IN THE ATOM.
22. A VARIABLE RESISTOR.
25. SMALL INPUT SIGNAL, LARGER OUTPUT.
28. A SINGLE PACKAGE CIRCUIT WHICH. CONTAINS MANY DISCREET COMPONENTS.
31. USES ELECTRICAL ENERGY TO CREATE VIBRATIONS IN THE AIR.
32. UNIDIRECTIONAL CURRENT DEVICE.
33. THE UNIT OF MEASURE FOR RESISTANCE.
35. LIGHT EMITTING DIODE.

Global Positioning Systems



GLOBAL POSITIONING SYSTEMS

GPS Systems

Upon completion of the activities in this unit, students will:

- be more aware of the development and applications of GPS systems.
- gain a greater knowledge of the history of GPS systems in modern society.
- have increased awareness of careers that utilize GPS systems.
- possess increased ability to research topics using the Internet and printed sources.

GLOBAL POSITIONING SYSTEMS
Name _____

Learning Objective: After completing this activity, the student will have increased knowledge of terms related to GPS systems.

GPS Vocabulary

Directions: Find the correct definition for each term given and on your own paper write the term and its definition in a complete sentence. Use correct capitalization and punctuation.

Terms:

1. Global Positioning System	2. Longitude	3. Latitude
4. Prime Meridian	5. Trilateration	6. Range
7. Map Key	8. Map contours	9. Scale
10. Pace	11. Navigation	12. Feature
13. Precision farming	14. Attribute	15. Value
16. Selective availability	17. DGPS	18. Rinex
19. Post-processing	20. Geographic information systems	

Definitions:

a. a space-based navigation and positioning system
b. site-specific farming
c. lines, or meridians, that divide the earth in segments and meet at the poles
d. acronym for receiver independent exchange
e. lines, or parallels, that indicate how far north or south a point is located
f. applying differential correction to GPS data after collection
g. the longitude line at zero degrees that runs through Greenwich England
h. intentional error inserted into GPS data by the US government
i. method of determining position by measuring the lengths of the sides of a triangle
j. actual values such as "6 feet' for how tall or "excellent" for condition
k. the distance one object is from another
l. describes features in broad terms such as "how tall, "condition"
m. tells what each symbol on a map represents
n. a method of presenting many types of data in a geographic format
o. lines on a map that join all locations that are the same elevation
p. in mapping terms, any object, area, or line that is to be mapped
q. the proportion used to draw something larger or smaller than it actually is
r. the process of planning and controlling movement from one place to another
s. the distance a person travels with each step

GLOBAL POSITIONING SYSTEMS
Name _____

Learning Objective: After completing this activity, the student will be more knowledgeable of history and development of GPS systems.

Truth and Lies About GPS Systems

Directions: Read the written passage carefully. On a separate sheet of paper entitled, The Truth About GPS Systems, pick out and write numerically (1-8) the false statements you find about GPS systems. After writing the false statements, briefly explain why each statement is false.

The Global Positioning System is a space-based navigation and positioning system that was designed by the U.S. military to allow a soldier or group of soldiers to determine their position to within 100 to 200 meters of truth. GPS is available 24 hours per day worldwide. Russia operates a system called *GLONASS* that is similar to GPS, but is far more reliable. Civilian uses for GPS are limited and do not affect the everyday citizen. Some of the civil applications of GPS are: search and rescue, mapping, surveying, and recreation. Each location on the earth's surface carries a universal geo-coordinate system address. These addresses are characterized by a South value and an East value. The GPS system consists of three major segments: the Space Segment, the Control Segment, and the User Segment. The Space segment is composed of satellites in orbit, the user segment consists of end users, and the control system maintains the integrity of the satellites and the data that they transmit. The control segment consists of components located at three strategic locations around the world. These segments are in Tanzania, Russia, and Nepal. The Master Control Station is located at Colorado Springs, Colorado. In essence, the GPS operates on the principle of triangulation. Each satellite in the systems transmits its own unique radio signal. Receivers on the ground receive this signal and calculate the distance to the satellite. The receivers then triangulate the distance to the satellites to determine their (the receiver's) location. Selective availability is the intentional degradation of the GPS signal to produce error within user receivers. This is a practice designed to prevent unfriendly forces from utilizing GPS. Selective availability may be employed at anytime to provide for better national security.

GLOBAL POSITIONING SYSTEMS (GPS)
Name _____

Learning Objective: After completing this activity, the student will gain proficiency in synthesizing information and rewording phrases.

GPS Two-Sentence Activity

Directions: Sentence-combining is combining short, choppy sentences into longer, more interesting sentences. In using sentence-combining, you may add any new words needed to complete the new sentence. The meaning, however, must be maintained. Notice there are two different ways to combine each cluster. On a separate sheet of paper, rewrite each combined sentence, checking spelling, punctuation and capitalization.

1. The Global Positioning System is a space-based navigation and positioning system that was designed by the US military to allow troops to autonomously determine their position within 10 to 20 meters of truth.

    A. GPS is a _____ and _____ _____.
    B. The US _____ developed GPS to help _____ locate their position within _____ to _____ meters.

2. During the late 1950's and early 1960's the U.S. Navy sponsored two satellite-based positioning and navigation systems: *Transit* and *Timation*. At the same time, the U.S. Air Force was conducting concept studies for a system called the *System 621B.* In April 1973, the U.S. Secretary of Defense designated the Air Force as the service to coalesce the systems into one workable system.

    A. _____ and _____ were two systems developed by the Navy. These systems were _____-_____ and used for positioning and _____.
    B. The Air Force was designated to coalesce two systems, the Navy's *Timation* and their _____. This order was issued in _____.

3. Civilian applications for GPS have quickly outpaced the military's. Almost anyone who needs to know where they are and where they're going can use GPS. Receivers mounted to new cars decrease car owner's insurance rates.

    A. GPS may be used by anyone who needs to know _____ they are and _____ they're going.
    B. Quick recovery of GPS-equipped cars that have been stolen _____ insurance rates.

GLOBAL POSITIONING SYSTEMS (GPS)
Name _____

Learning Objective: After completing this activity, the student will increase research and documentation skills.

GPS Research Activity

Directions: Using a variety of resource materials (i.e. Internet, encyclopedias, and textbooks) research and document findings on the topics listed below. Utilize this research to compile a paper (no less than 5 typed pages, double spaced) that addresses all the topics.

History of GPS systems

Data correction techniques

Selective availability

Aerial photography

GPS applications

GLOBAL POSITIONING SYSTEMS
Name _____

Learning Objective: Upon completion of this activity, the student will increase understanding of careers that utilize GPS systems.

Occupational Outlook Handbook

Directions: Using your WEB browser, type in the address for the Occupational Outlook handbook (http://stats.bls.gov/ocohome.hem). If this address does not work, use a search engine to locate the current address. Use the handbook to research information on occupations that utilize GPS systems. Select one career and summarize your findings in a two-page report. The report should include the following information:

Nature of work

Working conditions

Employment

Training and Qualifications

Job Outlook

Earnings

Related Occupations

GLOBAL POSITIONING SYSTEMS (GPS)

Name _____

Learning Objective: After completing this activity, the student will be more aware of careers that utilize GPS systems.

CAREERS THAT UTILIZE GPS SYSTEMS

Directions: Using a variety of materials (i.e. Internet, encyclopedias, and textbooks) research and document findings on the careers listed below. Utilize this research to compile a paper (no less than 5 typed pages, double-spaced) that addresses one of the careers.

Air traffic controllers

Airline pilots

Military intelligence personnel

Construction managers

Ship's captains

Surveyors

GLOBAL POSITIONING SYSTEMS (GPS)
Name _____

Learning Objective: After completing this activity, the student will gain proficiency in letter writing.

GPS: Final Letter

Directions: You have completed the GPS unit. You will now write a letter to your instructor explaining things you have learned and things you would have liked to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's Name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name),

First paragraph - Explain why you enjoyed or did not enjoy GPS systems.

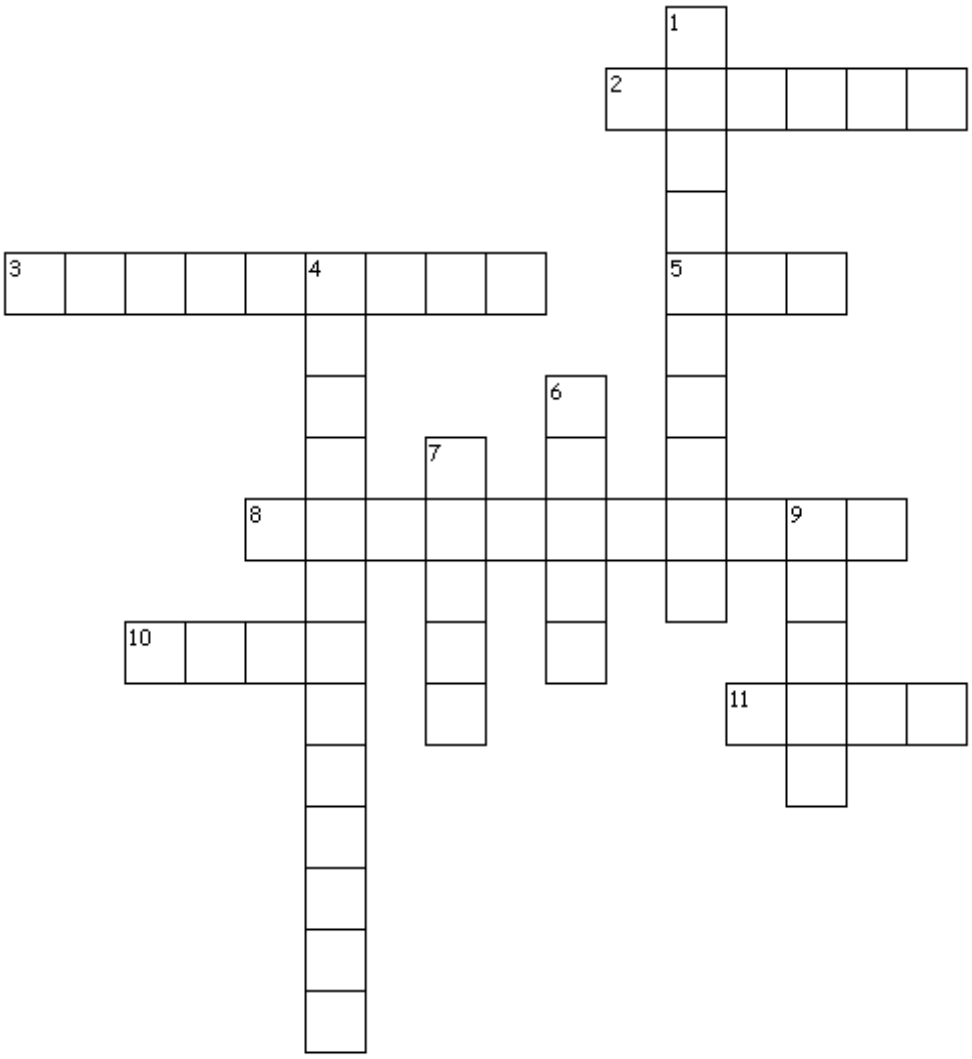
Second paragraph - Explain three important things you learned.

Third paragraph - Discuss what more you would have liked to have learned.

Sincerely,

Your signature
Type your name under
your signature

GPS SYSTEMS CROSSWORD



ACROSS

2. tells what each symbol on a map represents
3. lines that indicate how far north or south a point is located
5. a space-based navigation and positioning system
8. lines on a map that join all locations that are the same elevation
10. the distance a person travels with each step
11. applying differential correction to GPS data after collection

Down

1. the process of planning and controlling movement from one place to another
4. method of determining position by measuring the lengths of the sides of a triangle
6. acronym for receiver independent exchange
7. the proportion used to draw something larger or smaller than it actually is
9. the distance one object is from another

Global Positioning Systems Word Search

S Y E Y E T A G I V A N N O N

E R U T S X N O H R Z A Z O W

L A B I P O S I T I O N I N G

E T I L S S E Y F G Y T R L R

C I G I J A B D L Y I P O B W

T L W B Y W T O U S H N G A Z

I I J A C D B E I T G Q L T H

V M U L F A U U L I I L E S S

E D B I L J Q C T L E T F R E

Q L X A B C P U O R I P A P X

T G M V A O D E B M H T O L T

U J K A M E R M D X P S E Y A

L W S A C C U R A T E A U V N

H W E M E T S Y S K T D S N T

V B S S S G X C C Y K V J S X

Word List

ACCURATE	ACQUISITION	AVAILABILITY
COMPASS	GLOBAL	LATITUDE
LONGITUDE	MILITARY	NAVIGATE
POSITIONING	SATELLITE	SELECTIVE
SEXTANT	SYSTEM	UMBRELLA

GLOBAL POSITIONING SYSTEMS
Name _____

Learning Objective: After completing this activity, the student will have more knowledge of traditional navigation methods.

Traditional Navigation Tools

Directions: Listed below are several traditional (manual) navigation tools. Using various sources (i.e. textbooks, Internet, encyclopedia) research each device. On your own paper write a description of the device as well as a detailed explanation of its operation. Use complete sentences.

1. compass
2. sextant
3. map
4. plane table
5. theodolite

GLOBAL POSITIONING SYSTEMS
Name _____

Learning Objective: After completing this unit, the student will have greater skill at writing a job resume.

GPS Resume Writing Assignment

Directions: Using your WEB browser, type in the address for Community Learning Network (www.cln.org/themes/writing_resumes.html) If this does not work, use a search engine to locate the current address. Use the resources provided to develop your personal resume. You should "make believe" you are applying for a position as a surveyor.

GLOBAL POSITIONING SYSTEMS
Name _____

Learning Objective: After completing this activity, the student will have increased understanding of GPS mapping procedures.

GPS "School to Home" Activity

Directions: Using complete sentences, complete a step-by-step written "map" from your school to your residence. After completing this writing assignment, utilize the Street Atlas program (or comparable program) to create a map to your residence.

GLOBAL POSITIONING SYSTEMS
Name _____

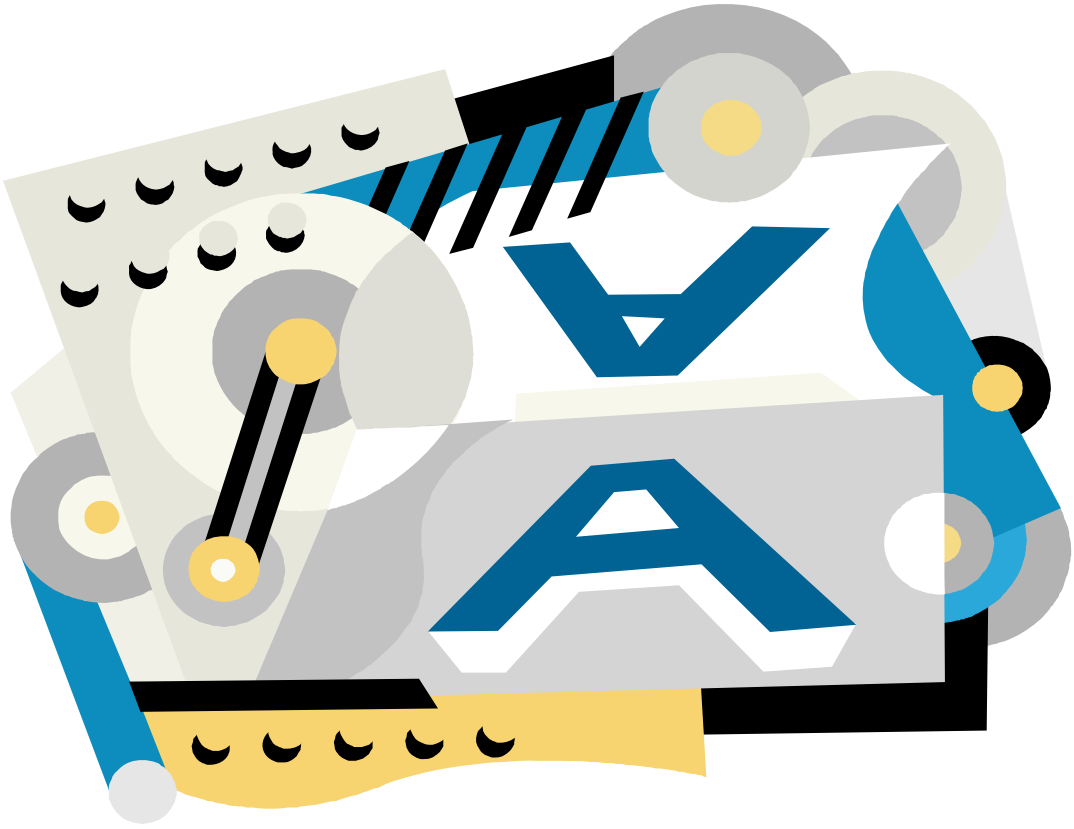
Learning Objective: After completing this activity, student will be more familiar with acronyms related to GPS systems.

GPS Acronym Activity

Directions: Utilize your text and other materials to determine the meaning of the following acronyms that relate to GPS systems. Then write a complete sentence describing the definition.

1. GPS_____
   _____
2. DGPS_____
   _____
3. CEP_____
   _____
4. DRMS_____
   _____
5. FOC_____
   _____
6. IOC_____
   _____
7. WGS84_____
   _____
8. GDOP_____
   _____
9. HAE_____
   _____
10. ILS_____
    _____

GRAPHIC COMMUNICATIONS



GRAPHIC COMMUNICATIONS

Upon completion of the activities in this unit, students will:

Be knowledgeable in additive and subtractive color theories.

- Have an understanding of the different graphic reproductions.
- Have an understanding of basic terms related to graphic communications.
- Have knowledge of the four basic printing processes.
- Be able to combine various components to design an original brochure describing

GRAPHIC COMMUNICATIONS

Name _____

Learning Objective: Upon completion of this activity, students will have deepened their understanding of related terminology by using meanings to complete activity.

Word Search

Directions: Find the hidden word in the puzzle from the word list below.

```
P S G S U O V E U N C F D X E F K R D H A J I T V L Z I X D
N A T D N M E Q B Y E S J S O O J B E T I W V N A H Z U J O
M S N O S U L F L I X D E Q F U T X A U E N O B T A A B W B
Z F J T C R A V L Q T G D G U R Z P A E X W K U E A Y Q U B
R P V Q O K K E M D T Y F I N C V L E N R Q O T Z Q G Y S A
Y X M C B N R Y I W E P M E B O T D B B E U S S L N F L G X
C A O B R B E E G I W W G I Z L E O D V H O E M F I I Y I G
E R U V A R G M F I R K Y L D O S O G U W J Z G R U O J E O
Z U U D T Y G X A D Z Z T Y U U H C X Y I X L S J F C C I T
H T X R Z U U I M T Z I X L H R E X P F N B M E F U J W Y I
X N D W H Q J R H K C A G R H P E G C V F A Z S W V L O R K
B L A C K G E S D Z R H P R C R T H W T G M E K X K D L S J
H F R H I X J Y C Q A K I L Q O F F S E H T I E M G W L U Q
Q G G V I M V H F A J Q E N Z C E E N E L V T J Y Z C E Z R
G N I T N I R P N E E R C S G E D T R I T A C A P H I Y I Z
H A K N S X T A X M W B J B M S A L T U R A Z F G T L B O L
S M R J N Q W R C K U D J P L S Y H V T V S L T P Q M E L Z
Z F A M Z V L G R L P C C I T J O S S M A A P P I G P E Z N
P D J T A X I O H K A G T L W G F B T W O K R D L X N Q P O
G Q K A M N N X V V K H O V R V U W D E G O A G A U N P E Y
I R X E R V B E F I P M V A E S K S Q J M G B F O D J N Q P
K P X O L S Z L G W I X P O R C Y F C X X N C Q T T I X S I
K K F A Z Z W F D L M H Y P H Y P B Z C M Q R C O I O G U N
T I R S Q J Q U Y A Y B K M M A T K Q F Q A H W Y P I R O P
K X J Y N I V M L D B E B L A N K E T S L E Y R O H P C N Z
```

BLACK
CYAN
GRAVURE
MAGENTA
RELIEF
SCREENPRINTING
STOCK
YELLOW
PANTONE MATCHING SYSTEM
I
BLANKETS
FLEXOGRAPHY
NTAGLIO
PLATES
ROTOGRAVURE
SHEETFED
SUBSTRATE
FOUR COLOUR PROCESS
OFFSET LITHOGRAPHY

GRAPHIC COMMUNICATIONS

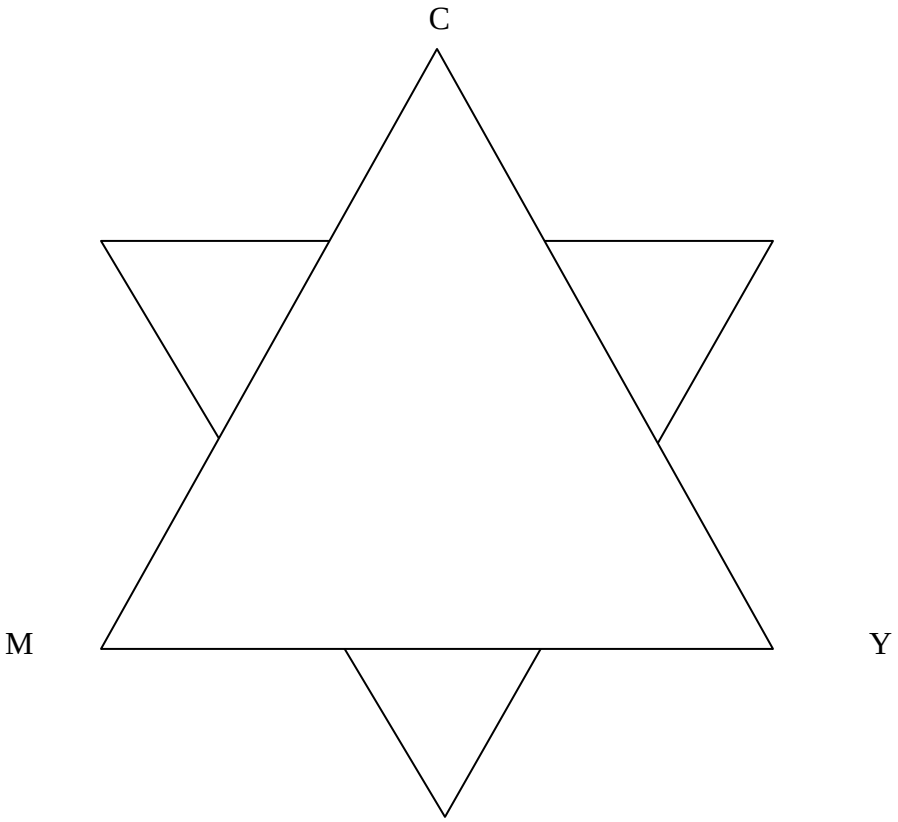
Name: _____

Learning Objective: Upon completion of this exercise, students will be able to explain the theories of additive and subtractive color.

Color Theory

Directions: 1) Complete the color triangle by using various combinations of the process colors. 2) Using complete sentences describe the difference between the theories of additive and subtractive colors.

1).



2). Explain the differences between additive and subtractive colors.

_____
_____
_____
_____
_____

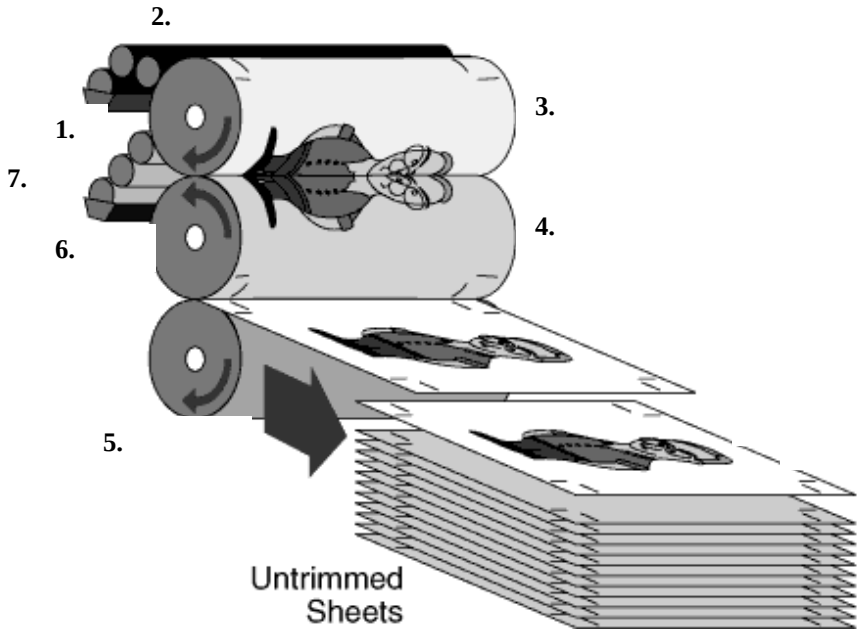
GRAPHIC COMMUNICATIONS

Name _____

Learning Objective: Upon the completion of this activity, students will have identified and labeled various components of a Lithographic press.

Lithographic Press Exercise

Directions: Identify the parts of the lithographic press and describe the purpose of each one.



Word Bank:	Blanket Cylinder	Impression Cylinder	Ink tray
	Plate Cylinder	Inking Rollers	Water tray
	Water Rollers		

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

GRAPHIC COMMUNICATIONS

Name_____

Learning Objective: Upon completion of this activity, students will understand the different operating units of an offset press.

OFFSET PRESS OPERATIONS

Directions: Research the following operating units of an offset press, then write a brief summary of each unit.

Feeding Unit-

Registration Unit-

Printing Unit-

Delivery Unit-

GRAPHIC COMMUNICATIONS
Name_____

Learning Objective: Upon completion of this activity, students will have compared and contrasted the 4 basic printing processes.

Printing Processes Descriptions

Directions: Describe in detail the four major printing processes. Include the main applications of each process and unique characteristics.

1. Flexography:

2. Offset Lithography:

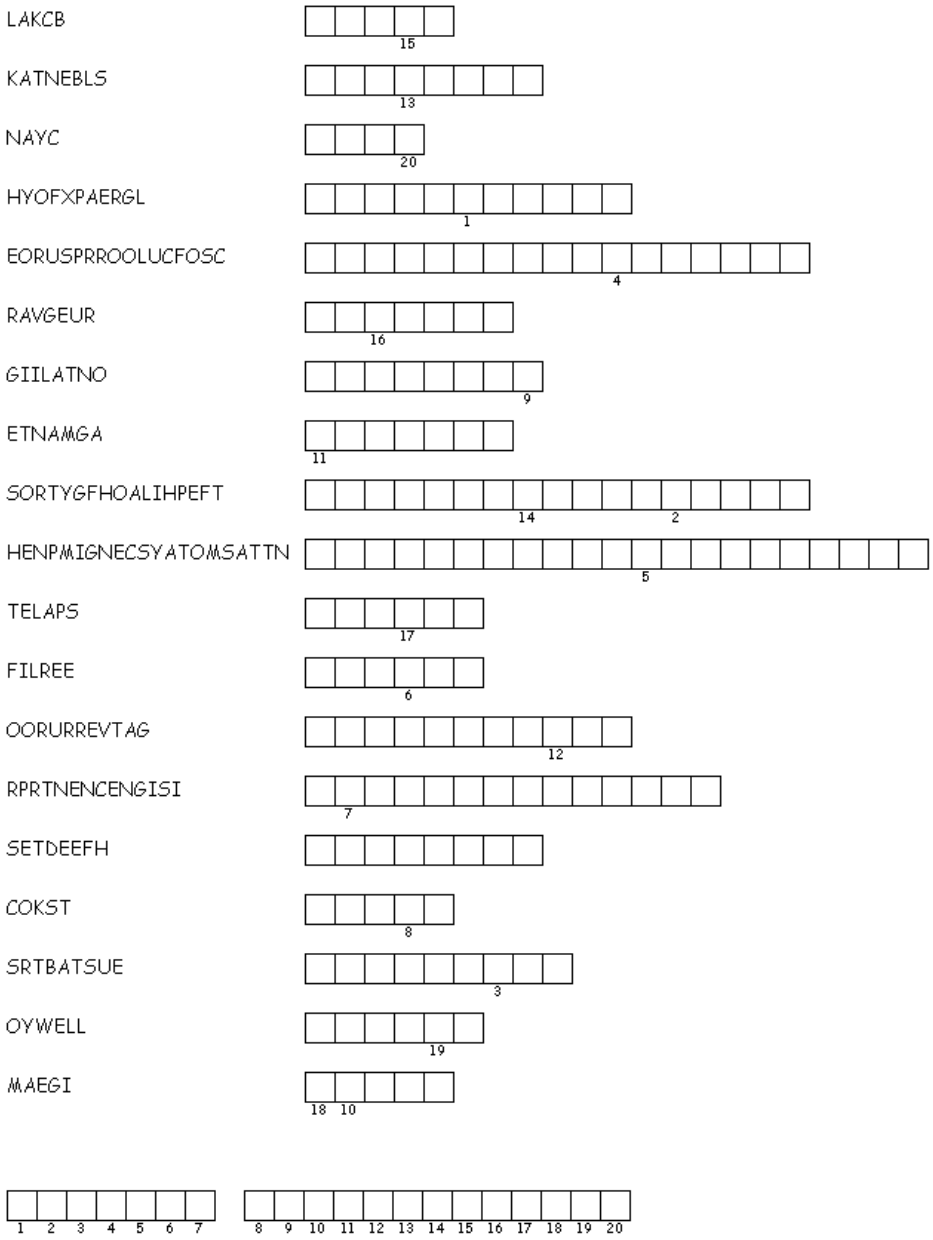
3. Rotogravure:

4. Screen Printing:

GRAPHIC COMMUNICATIONS

Name_____

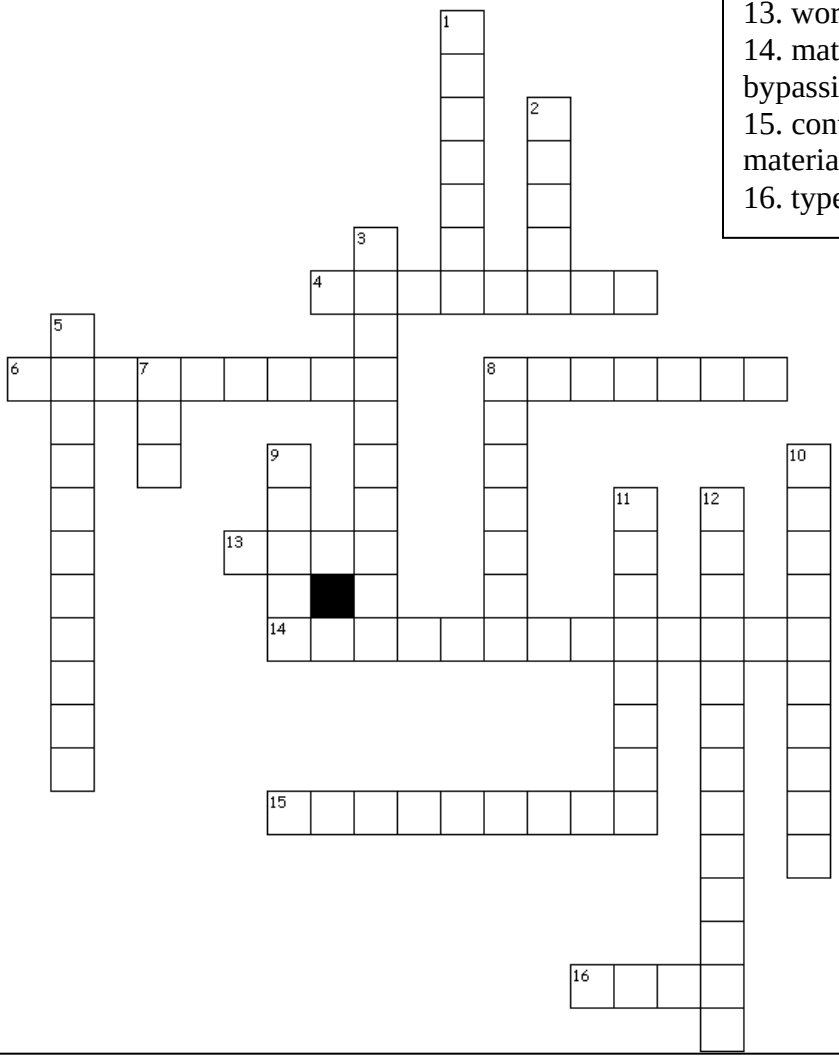
Learning Objective: Upon completion of this activity, students will have better understanding of graphic communication terminology.
Unscramble Activity
Directions: 1.) Unscramble each of the clue words. 2.) Define the words.
Copy the letters in the numbered cells to other cells with the same number.



GRAPHIC COMMUNICATION
Name_____

Learning Objective: Upon completion of this activity, students will have used their knowledge of print-related terminology to complete the puzzle.

Crossword Puzzle



Across

4. text position in reference to graphics
6. pictures broken into dots
8. the design of a page
13. words
14. materials outputted directly to press, bypassing film and plating
15. containing descriptive or advertising material
16. typestyle

Down

1. artwork
2. one page advertisements
3. a small containing news of interest chiefly to a special group
5. materials ready to be shot to film
7. For Positioning Only
8. copy containing no halftones
9. color extended past margins
10. page positioning
11. pictorial representations
12. materials outputted directly to the press plate, bypassing film

GRAPHIC COMMUNICATIONS
Name_____

Learning Objective: Upon completion of this activity, students will be able to describe the various methods of making silkscreen stencils.

Silkscreen Printing

Directions: Using one to two complete sentences, describe each of the methods of making a stencil for silkscreen printing.

1. Paper Stencil –

2. Tusche Stencil-

3. Hand cut Stencil Film –

4. Photographic Stencil-

GRAPHIC COMMUNICATIONS

Name _____

Learning Objective: Upon the completion of this activity, students will be able to describe the purpose of given components of hand screen-printing.

Hand Screen-Printing

Directions: Listed below is the equipment needed for hand screen-printing. Describe in complete sentences the purpose of each**.**

1. a screen frame

2. a screen base

3. registration guide

4. a side kick

5. a squeegee

GRAPHIC COMMUNICATIONS

Name _____

Learning Objective: Upon completion of this activity, students will understand the terminology associated with screen-printing.

Unscramble and Define

Directions: Unscramble and define the following terms then write a brief summation of the screen-printing process using as many of the terms as possible.

UGQEESEE

KIN VISCYISOT

SENCER NIPGNOE

NO CATCONT PNNIGRIT

FOF CTCOANT TGNIINPR

LOLCUOTIRM PINTIRNG

KIN TIDTINRUOBSI

DIGNYR

SIELNTC

RESNEC FAEMR

GRAPHIC COMMUNICATIONS
Name _____

Learning Objective: Upon completion of this activity, students will be able to compare and contrast the various types of graphics.

Defining Terms

Directions: Define each of the following term, and then explain their similarities and differences.

1. Halftone –

2. Duotone –

3. Line art -

GRAPHIC COMMUNICATIONS

Name: _____

Learning Objective: Upon completion of this activity, students will understand the terminology associated with halftone photography.

HALFTONE PHOTOGRAPHY

Directions: Define the following terms that are associated with halftone photography then write a brief summary of the halftone photography process using the terms.

Halftone-

Density-

Reflectance-

Transmittance-

Contrast-

Continuous-tone copy-

Sensitometer-

Halftone photography-

Screen Ruling-

Vignetted screen pattern-

Dot size-

Dot gain-

Bump exposure-

GRAPHIC COMMUNICATIONS
Name _____

Learning Objective: Upon completion of this activity, students will be able to produce a brochure describing the production steps of one of the 4 major printing processes.

Brochure

Directions: Create a brochure that describes one of the four major printing processes. Be sure to include terminology and careers. Use the space below for rough and thumbnail sketches.

GRAPHIC COMMUNICATIONS
Name _____

Learning Objective: Upon completion of this activity, the students will have researched various careers to increase understanding of print related fields.

Career Research

Directions: Research each of the following careers in the printing industry. Write a brief, but thorough, job description of each position.

1. Estimator-

2. Pre-press technician-

3. Pressman-

4. Bindery Operator-

5. Customer Service representative-

6. Designer-

7. Illustrator -

8. Artist –

9. Photographer -

GRAPHIC COMMUNICATIONS
Name _____

Learning Objective: Upon completion of this activity, students will have researched different occupations in the field of graphic communication.

Career Research - Occupational Outlook Handbook

Directions: Go to the Occupational Outlook Handbook site (http://stats.bls.gov/ocohome.htm). Click on the button labeled production. Write a brief summary on the three categories of printing. Be sure to include, education/training, salary, and job description.

1. Bindery Workers

2. Prepress workers

3. Printing Press operators

Internet

Web

INTERNET/WEB

Upon completion of the activities in this unit, students will:

- Be able to identify some general facts in the history of the Internet.
- Recognize some of the uses of the Internet in the workplace.
- Be able to identify some general facts about the Internet.
- Gain experience in answering a job advertisement.
- Have the ability to recognize basic HTML code and its usage.
- Posses the ability to use the Internet to find a job.

INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will be able to search the Internet for information effectively.

Internet Scavenger Hunt

Directions: Using the Internet, find the requested information by searching. Then, write the answers in the space provided.

1. What is Dr. Seuss' real name (find his whole name: first, middle, and last)?

2. What does M*A*S*H stand for?

3. What company introduced the Macintosh series of personal computers? What year did this happen?


at is the word of the day at dictionary.com?

5.

6. Who is Enzo Ferrari? Where and when was he born?

7. What is the state of Georgia's motto? When did Georgia join the Union?

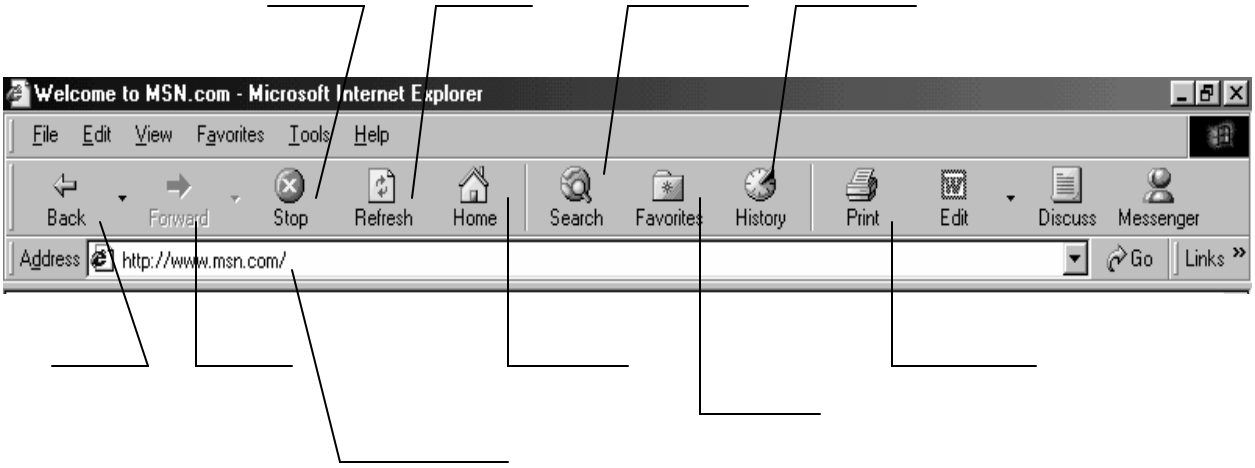
INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will recognizes basic parts of the Internet Explorer tool bar.

Browser Identification

Directions: Fill in the blanks with the letter that best corresponds with the tool.



A- Prints the document.

B- Stops an operation.

C- Allows you to search for a subject.

D- Opens a list of saved URLs.

E- Returns to the previous page.

F- Returns to the home page of the web site.

G- Goes to the next page.

H- This is where you type the URL.

I- Loads the current page again.

J- Links for Web sites and pages visited in previous days and weeks.

INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will be able to use the Internet for web related research.

Web Research

Directions: Use the Internet to research the topic below. After researching the topic, answer the question in essay form. Type your finished essay in a word processing program and turn in to the instructor.

An increasing number of doctors are going online…

as volunteer medical consultants. People suffering from almost any disease can find relevant support groups, mailing lists, and Web sites. These forums may help reduce feelings of isolation and provide invaluable information. Many doctors, however, still are reluctant to go online. They fear online forums can raise false hopes, repeat unsubstantiated claims, or promote quack remedies. If someone you knew had a serious condition, would you suggest trying the Internet? Why? What cautions would you recommend when exploring a health issue online? How would you advise someone to act on medical information received from the Web?

This website may be helpful in your search.

http://www.ctdoctors.com/cmdsolink.htm

INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will be able to use the Internet for web related research.

Web Research

Directions: Use the Internet to research the topic below. After researching the topic, answer the question in essay form. Type your finished essay in a word processing program and turn in to the instructor.

The number of people telecommuting has increased fourfold…

in the past eight years. Telecommuting offers several advantages to employees—flexible work schedules, casual dress codes, and no rush-hour traffic. Studies show employers also benefit— less office space is required and telecommuters are 10 to 20 percent more productive than their office-bound brethren. Whether telecommuting is a success, however, appears to depend on three factors: the employee's personality, the employer's willingness to make adjustments, and the nature of the job. What type of personality is necessary to telecommute successfully? What adjustments must be made by employers? Given your personality and the career you plan to pursue, could you be a successful telecommuter? Why?

INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will know some basic communication components.

Discovering the Internet

Fill in the Blanks

Directions: Complete each sentence with the correct term or terms.

1. _____ refers to the transmission of data and information between two or more computers using a channel such as a standard telephone line.

2. One application that relies on communications technology is _____, which is the direct exchange of documents from one business's computer system to another.

3. A(n) _____ is the path that data follows as it is transmitted from the sending equipment to the receiving equipment in a communications system.

4. Three kinds of physical cabling media are _____, which consists of pairs of plastic wires wound together, _____, which is composed of a copper wire conductor surrounded by three layers, and _____, which uses hair-thin strands of glass or plastic to transmit pulses of light.

5. A(n) _____ is a device that attaches to a computer and converts between digital signals and analog signals.

Short Answer

Directions: Write a brief answer to each of the following questions.

1. How are point-to-point lines different from multidrop lines? How is a switched line different from a dedicated line? What are the advantages and disadvantages of using a switched line? _____

2. How is asynchronous transmission mode different from synchronous transmission mode? What is a parity bit? _____

3. What functions are performed by communications software? What is the purpose of each? _____

4. How are local area networks (LANs) different from wide area networks (WANs)? How is the file-server method of information resource sharing different from the client-server method of information resource sharing? _____

5. Why are communications protocols important? What are the Ethernet and token ring protocols? _____

INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will recognize some of the uses of the Internet in the workplace.

Internet in the Workplace

Directions: Interview at least three people who are employed in different jobs. Find out how each person uses the Internet on the job. Share your findings in a class discussion. To help organize your data, use the chart on this sheet.

TYPE OF JOB	TYPE OF EMPLOYER	USES OF INTERNET

INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will understand some basics in networking.

Basic Networking

Directions: Answer the following questions in complete sentences. Use the back of this page if you need more space to answer the questions.

1- What is the primary function of a network?

2- How many computers are required to create a network?

3- What is the difference between a workstation and a client?

4- What is a server?

5- What is a client?

6- What is the main disadvantage of using a peer-to-peer network?

7- What is the main advantage of using a peer-to-peer network?

8- What is the name of the organization that sponsors the Network+ Certification?

9- The Network+ exam is made up of two separate groups. What are they?

10- There are many benefits of being Network+ Certified. Name three.

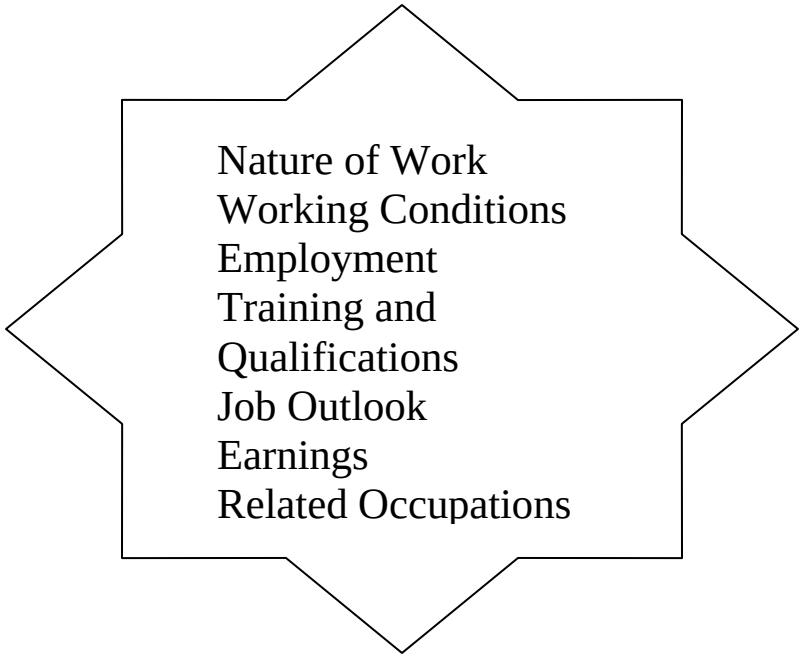
INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will be exposed to careers in the field of the Internet.

Occupational Outlook Into the Internet

Directions: Using your Web browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohomw.htm). If this address doesn't work, use a search engine to locate the current address. Use the handbook to research information on occupations that involve the Internet. Select one career and summarize in a two-page report what you discovered. Include the following:



INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this activity, the student will be able to discuss and describe some basic internet facts.

The Internet

Directions: Use the Internet to answer the following essay questions. Use a separate sheet of paper to record your answers. Remember to use complete sentences and use correct grammar and spelling.

1. Explain in detail what is the Internet is?

2. What is an Intranet?

3. What is a firewall and what is its purpose?

4. What is an IP address?

5. What is a browser and what is its purpose?

6. What is a search engine and how does it work?

7. What is e-mail?

INTERNET/ WEB

NAME _____

Learning Objective: Upon completion of this activity, the student will have experience writing a business letter.

INTERNET/ WEB: Final Letter

Directions: You have completed the Internet/ Web unit. You will now write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name)

First paragraph- Explain what you enjoyed or did not enjoy about Internet/ Web.

Second paragraph- Explain three important things that you learned.

Third paragraph- Discuss what more you would have liked to learn.

Sincerely,

Your Signature
Type your name
under your signature.

INTERNET/ WEB

Name_____

Learning Objectives: Upon completion of this activity, the student will be able to use the internet to find careers that in the Internet field.

Using the Internet to Find a Job

Directions: By using the Internet as your reference tool, find at least ten classified ads for positions in Internet related fields (for example: web page designer, web site manager, network administrator, etc.). When you find the ads, copy and paste them into a Word document. Then, print the document out and turn in to your instructor.

INTERNET/ WEB

Name_____

Learning Objective: Upon completion of this assignment, the student will know a basic outline of the history of the Internet.

Internet History

Directions: Match the given dates to the correct events in Internet history.

1969	1972	1992	1991				
1970	1980	1995	1986				
1986	1988	1990					

_____1- The original ARAPA (Advanced Research Projects Agency) commissioned four institutions to conduct research into computer networking communications.

_____2- In December of this year, the initial ARAPANET, called Network Control Protocol , was developed and implemented.

_____3- Ray Tomlinson of BBN, invented the first e-mail program.

_____4- The Department of Defense made the switch from NCP to TCP/IP.

_____5- ARAPANET host protocol was not changed from NCP to TCP/IP until _____.

_____6- The Internet Engineering Task Force (IETF) was created.

_____7- The National Science Foundation began the NSFNET to link its six federal funded supercomputers to each other as well as to researchers around the country.

_____8- The T1, which transmitted data at a rate of 1.5 megabits/second, went on-line.

_____9- The ARAPANET was disbanded.

____10- The NSFNET was disconnected.

____11- The University of Minnesota developed the first friendly interface to the Internet.

INTERNET/ WEB

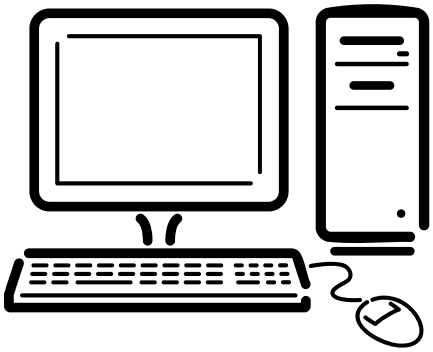
Name_____

Performance Objective: Upon completion of this activity, the student will know the most commonly used tags in creating an HTML document.

Commonly Used HTML Tags

Directions: In the blank, write the correct tag for the given description.

1. _____ Encloses the entire HTML document.
2. _____ Encloses the head of the HTML document.
3. _____ Indicates the title of the document and is used within the head of the document.
4. _____ Encloses the body of the document and comes immediately after the </head> tag.
5. _____ Indicates a paragraph.
6. _____ Indicates the largest heading size.
7. _____ Indicates a line break.
8. _____ Indicates the smallest heading size.
9. _____ Indicates a horizontally ruled line.
10. _____ Makes the text bold.



INTERNET/ WEB

Name_____

Performance Objective: Upon completion of the assignment, the student will know basic HTML code and its usage.

HTML Activity

Directions: Put your answers in the blanks provided or circle the correct answer.

1- HTML stands for _____ _____ _____ _____.

2- Which tag begins and ends each HTML document?

   a. (html) (/html) b. <body> </body>
   c. <title> </title> d. <html> </html>

3- What is the tag for the largest level heading?

   a. (head) (/head) b. <font size=2>
   c. <h1> </h1> d. <h6> </h6>

4- What is needed to create a HTML document?

   a. spell check b. e-mail account
   c. Notepad d. fax machine

5- The first tag in a pair is called the _____ tag and the second is the _____ tag.

6- Which tag encloses the head of the HTML document and immediately follows the HTML tag? _____

7- TRUE or FALSE The tags are not case sensitive.

8- TRUE or FALSE Each tag begins and ends with a caret (< >).

9- What does the tag do to the text? _____

10- What does the <hr> tag do? _____

Circle the mistakes in the sample HTML document provided below.

<html>
<head> Are there any mistakes here? <head>
<title> HTML is fun </title>
(body)
<p> Learning HTML is very fun. I can make my own web pages.
</s> This is an example of strikethrough text. </s>
</body> </html>

ESSAY:

What is a link?

INTERNET/ WEB

Name_____

Performance Objective: Upon completion of the assignment, the student will know and recognize basic HTML code.

HTML Code Quiz

Directions: Determine whether the following statements are true or false. Write the answer in the blank provided.

_____1- HTML is a special code that has to be written in a spreadsheet format.

_____2- Tags are used before and after special words.

_____3- HTML code is case sensitive.

_____4- The basic HTML document contains two parts: the head and the body.

_____5- The head contains the title.

_____6- The actual text, images and tags are placed in the body.

_____7- The first tag in every HTML document is the <HTML> tag.

_____8- When you SAVE in notepad, you must save as a .doc file.

_____9- The <title> markup goes on the bottom border of your page.

_____10- Headings are used in HTML to dictate different sections.

_____11- There are only two sizes of headings.

_____12- You don't have to close a heading.

_____13- <P> starts a new paragraph and leaves a blank line.

_____14- To separate sections of you page with a line, you'll use <line>.

_____15- Hyperlinks connect your computer to another telephone.

_____16- To begin an unordered list you start with <ul>.

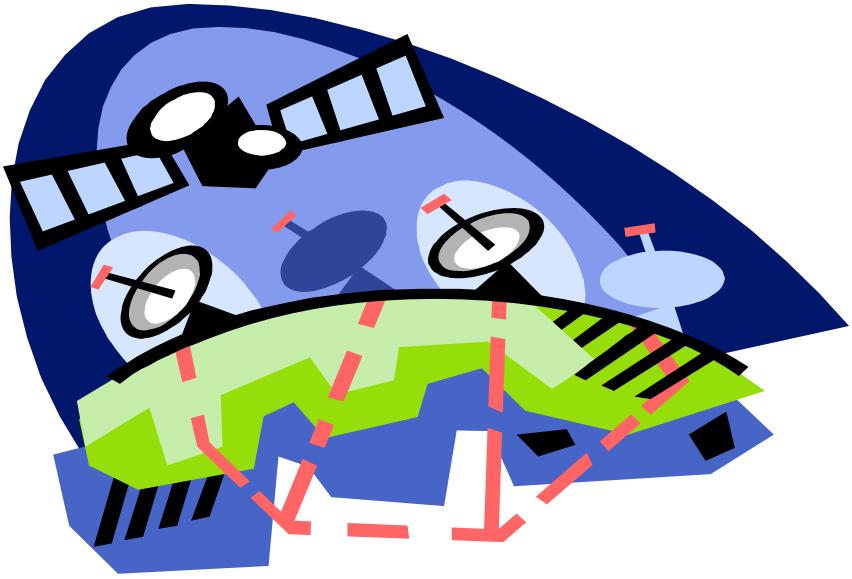
_____17- Before each item in your list you type <li>.

_____18- To create an ordered list you type <ol>.

_____19- Two common formats in use on the www are .gif and .jpg files.

_____20- You can place images in your HTML document by using the <picture> tag.

Laser
and
Fiber Optics
Technology



Laser /Fiber Optic Technology

Upon completion of the activities in this unit the student will:

- have a better understanding and appreciation of laser/fiber optic technology.
- gain an insight of career opportunities in the field of laser/fiber optic technology by researching various topics.
- be able to demonstrate writing competency in the field of laser/fiber optic technology.
- possess increased knowledge concerning how laser/fiber optic technology is used to produce products and services that meet society's needs.

LASER/FIBER OPTIC TECHNOLOGY
Name _____

Learning Objective: Upon completion of this activity the student will be able to develop a list of safety tips using complete sentences.

SAFETY TIPS

Directions: Develop a list of five safety tips in two of the following areas using complete sentences:

Conducting light refraction experiments.

(1) Measuring electrical power.
(2) Using lasers to cut materials.
(3) Testing electrical and fiber optic connections.

LASER/FIBER OPTIC TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity, students will obtain knowledge concerning the history of lasers and fiber optics, safety using lasers, laser classification, how lasers and fiber optic cables operate and the practical uses of laser and fiber optics.

History of Laser and Fiber Optics

Directions: Answer the following questions.

1. **L. A. S. E. R.** is an acronym for _____
   A. Light Area Service Energy Regularity
   B. Light Application to Strength Electrical Reappearance
   C. Low Amplification of Stringent Emitting Realties
   D. Light Amplification by Stimulated Emission of Radiation

2. What classification of lasers produce no hazards other than electrical
   A. Class I
   B. Class II
   C. Class III
   D. Class IV

3. Two materials that make fiber optics are _____
   A. Aluminum and copper
   B. Glass and plastic
   C. Cotton and glass
   D. Plastic and steel

Safety notes: Never operate the laser without both instruction and permission
Never direct laser beam at another student's eye.
Never use the laser for anything other than what for its intended use.
Never look at reflections of the laser beam.

Words to know:

Photon	White light	Gas Laser
Coherent Light	Amplification	Frequency

Match the words in the right column to the appropriate clue in the left column.

1. A light particle
2. Used for high data rates and long distance transmission
3. A field of study, which consists of light, sources
4. Light loss in transmission
5. Electromagnetic.
6. A substance generally characterized by its wavelength

A. Photon
B. Glass Fiber
C. Core
D.
E. Wave
F. Infrared
G. Attenuation
H Fiber Optics

LASER AND FIBER OPTIC TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will have a basic understanding of the classes of lasers

INVESTIGATE THE NATURE OF LIGHT

Directions: Read each of the following classes of laser

Class I -	The output from this laser has not been known to produce biological injury.
Class II -	The laser beam can produce eye injury stared into it for longer than 0.25 seconds, or if the beam is looked at directly with optical instruments.
Class III -	Lasers in this class can produce eye injury if the eye is exposed to a direct beam for only an instant.
Class IV -	This laser's direct beam and reflections can produce eye injury. Exposure to the skin is hazardous. The beam is also a fire hazard.

LASER/FIBER OPTIC TECHNOLOGY

Name _____

Learning Objective: Upon completing this activity students will be able to describe the difference between white light and a laser and describe the organization of the two types of light.

Laser Light – Single Color Light

Safety:

- Before you begin working with laser equipment, read the following safety Rules.
- Operate the laser only when instructed to do so.
- Do not direct the laser toward your eyes or another student's eyes.
- Make certain to turn off the laser when the activity is complete.

Directions:

1. Gather the following materials:
   Laser
   laser power supply
   prism (crystal)
   piece of white paper or cardboard
   flashlight

2. Plug the power supply cable into the jack on the back of the laser.

3. Plug the power cord from the laser power supply into an electrical outlet.

4. Turn on the laser. Make certain to observe all laser safety rules.

5. Position the laser so that the beam is pointing toward the back of the
   work station.

6. Shine the white light or sunlight through the prism. (You may use the flashlight located in the module activity if you are not near a window.) Whichever form of light you use, a color spectrum will appear. This is due to the fact that white light is made up of many different wavelengths of light

7. Write a brief description of your observations. Make sure you record the colors as they appeared on the paper.
   _____
   _____

8. Allow the laser beam to pass through the prism. Write a brief description of your observation on the blank lines.
   _____

LASER/FIBER OPTICS TECHNOLOGY

NAME _____

Learning Objective: Upon completion of this activity students will have a better understanding of light and the optical fiber.

Light and the Optical Fiber

Directions: Complete the following exercises.

1. Fiber optics, as a technology and a field of study, consist of light sources such as _____, light-sensitive elements such as _____, and optical light pipes, or _____, through which the transmitted light passes to reach the receiver.

2. **True/False**: If a statement is true, write *True* in the blank. If a statement is false, write *False* in the blank.

____ 1. Near-infrared radiation has a longer wavelength than visible light.
____ 2. A photon of infrared radiation has less energy than a photon from blue light.
____ 3. Optical fibers are very low loss guides for light rays.

3. Answer the following questions.
   1. Light, whose wavelengths include ultraviolet, visible, and infrared, is from the _____ spectrum.

   2. The speed of light in a vacuum is approximately _____ meters per second

   3. The particle theory describes light as being composed of tiny packets of energy called _____.

LASER/FIBER OTPIC TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will have an understanding of fiber optic transmitters.

Fiber Optic Transmitters

Words to know:	Light Emitting Diodes (LED)	Housing
	Electronic Interface	Light Source
	Optical Interface	Optical Monitor
	Temperature Sensing and Control	Drive Circuit

Directions: Complete the following exercises**.**

True/False: If a statement is true, write *True* in the blank. If a statement is *False*, write False in the blank.

____ 1. LEDs are inexpensive.
____ 2. LEDs can be made from the same materials as laser diodes.
____ 3. A laser is a coherent source of optical radiation.

1. What two light sources are most often used in fiber optic systems?

   _____

   _____

2. Name at least two of the components internal to the fiber optic transmitter.

   _____ _____
   _____ _____
   _____ _____

LASER/FIBER OPTIC TECHOLOGY
Name _____

Learning Objective: Upon completion of this activity the student will better understand receivers in the laser and fiber optic systems. Students will be able to explain fiber optics to their friends and understand how it applies to practical use

Receivers for Fiber Optic Systems

Define the following words:

Photodarlington	Phototransistor
Photodiode	Avalanche Photodiode

True/False: If the statement is true, write *True* in the blank. If the statement is false, write *False* in the blank.

____ 1. Light photons create many electrons and holes in a photodiode.
____ 2. The preamplifier of a fiber optic receiver sets the noise floor.
____ 3. The housing, optical interface, and electrical interface are very similar in transmitters and receivers.

LASER/FIBER OPTIC TECHNOLOGY

Name _____

Learning Objective: Upon completion if this activity, students will have an understanding about measuring with lasers, lasers as weapons, and the use of lasers in chemistry

Measuring with Lasers and the use of Lasers in Chemistry

DIRECTIONS: ANSWER THE FOLLOWING QUESTIONS

1. Write a paragraph explaining the following types of lasers and how they are used in the military.
   A. Anti-missile weaponry
   B. A site for taking aim
   C. Mock battle

2. Write a paragraph explaining how lasers are used in the field of chemistry.

LASER/FIBER OPTIC TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will have an understanding of uses of laser and the field of medicine.

Laser and Fiber Optics in Medicine

Explain how lasers are used in each of the following medical procedures.

A. Skin treatment
B. Surgery
C. Dental maintenance

Read the following paragraphs and write a brief summary in your own words.

2. In the field of medicine, many applications of laser technology are being used, the most common being the endoscope. It is used for the direct visual examination of internal body surfaces such as the arteries, heart, lungs, throat, and many others. Laser angioplasty uses a fiber optic bundle to couple laser energy to burn away plaque in blocked arteries to restore blood circulation. Fibers are also with lasers to fragment gallstones. These procedures replace conventional surgery, reduce trauma, and allow quicker recovery time, all at a lower risk.

3. Laser surgery is also common in less life-threatening surgery, such as arthroscopic surgery for damaged knee ligaments and cartilage. The key benefit of fiber-coupled surgery is the reduction of conventional cutting required to "repair" the ligament, thus less of the healthy surrounding tissue is damaged in surgery. (This is the type of surgery that is discussed during football and basketball games.) As these laser producers become more routine and cost effective, the medical profession will begin to replace conventional procedures with these methods.

Multimedia

MULTIMEDIA

Upon completion of the activities in this unit, students will:

- improve written communication skills in the Multimedia area.
- expand their technical vocabulary in the Multimedia area.
- apply the creative and organizational skills required to write short essays.
- improve basic knowledge and use of the internet.
- practice basic research and documentation of information.

MULTIMEDIA
Name_____

Learning Objective: Upon completion of this activity, the student will be able to correctly define certain multimedia terms.

Directions: Write the letter of the correct word in the space provided.

Multimedia Matching

_____ 1. An individual screen in a slide show

_____ 2. A series of slides displayed in sequence

_____ 3. A special effect used to introduce a slide during a slide show

_____ 4. Any element that appears on a slide, such as clip art, text, drawings, charts, sounds, and video clips

_____ 5. The file you save to disk that contains all the slides, speaker's notes, handouts, etc. that make up your presentation

_____ 6. A view of the titles and text of all your slides in one, easy to scroll page

_____ 7. A pre-designed layout

_____ 8. A text format where each sentence is marked with a small graphic like a dot or a star.

_____ 9. Decorative text

_____ 10. Writing or words

_____ 11. The setting in which the slide is arranged

_____ 12. Blending of two or more colors in a side to side or top to bottom fade

_____ 13. To practice timings

_____ 14. Pre-designed graphics that can be added to a slide

_____ 15. To add special visual or sound effects an object

a. text	g. gradient	m. object
b. animate	h. text	n. transition
c. template	i. word art	o. slide show
d. clip-art	j. bullet	p. slide
e. rehearse	k. outline	
f. background	l. presentation	

MULTIMEDIA TECHNOLOGY
Name_____

Learning Objective: Upon completion of this activity, the student will be able to create a script for use in a storyboard.

Directions: Select a favorite children's short story like The Three Little Pigs. Re-write the story in your won words in the space provided below. Break your story up into 7 mini-paragraphs (1-2 sentences each). You will use this to create a storyboard in another activity.

Storyboarding Activity 1

MULTIMEDIA TECHNOLOGY

Name_____

Learning Objective: Upon completion of this activity, the student will be able to create a storyboard.

Directions: Your job is to create a multimedia presentation of the short story that you wrote in Activity 1. You will need to include a title slide, one slide for each mini-paragraph, and a ending slide for a total of 9 slides. Use the space below to plan your presentation. Sketch the graphics that will appear in your presentation. Use colored pencils to show the colors that you plan to use.

Storyboarding Activity 2

MULTIMEDIA TECHNOLOGY

Name_____

Learning Objective: Upon completion of this activity, the student will be able to create a word search using the Internet.

Brainstorm

Directions: Use the space below to brainstorm for words that relate to multimedia. List at least 15 words. Then using the computer, go to www.puzzlemaker.com to create a word search using the words in your list.

Directions for creating a word search using www.puzzlemaker.com

1. Once at the website, choose word search from the puzzle types list. Click go.
2. Enter a title for your puzzle.
3. Skip to step five and enter your words. You can simply put a space between words.
4. Check to make sure that all of your words are spelled correctly.
5. Click create a printable version.
6. Print two copies, one to turn in to your teacher, and one for you to complete.

MULTIMEDIA
Name_____

Directions: Unscramble each of the clue words.
Take the letters that appear in ◯ boxes and unscramble them for the final message.

Multimedia Word Scramble

TETX

EINAAMT

RALPTCI

TEPMALET

EEHARSER

RKGUNOABDC

GIETARDN

RAODTWR

LEBTUL

PIRNANTETOSE

NITULOE

BEJTOC

SAINOIRNTT

DISLE

SIWDELSOH

RIPMOT

MIITEMDAUL

MULTIMEDIA

Name_____

Directions: Locate the list of words in the puzzle.

S B G P D I O T Y T R N C F E

L U J W S B R R E D O T C O U

I L A T J A S M G I I D X C S

D L J E P E P T T R U A Z E W

E E C I X L Y A W O R D A R T

S T L W A N T E S R A E H E R

H C R T F N I C F E D I L S M

O T E A E B A C K G R O U N D

W Y N S N Y O P U U N E Y W O

I G E E W S A U A F B T E J B

H R W O I Q I Y T S V A D A Y

P X P S A D K T W L R M C X X

J R J E U Y A D I I I I G Z T

F P K K Z O A R F O Q N K E F

U U T G K A D H G E N A E H R

Text
Animate
Clipart
Template
Rehearse
Background

Gradient
Wordart
Bullet
Presentation
Outline
Object

Transition
Slide
Slideshow

MULTIMEDIA

Name _____

Learning Objective: The student will use the Occupational Outlook Handbook on the Internet to research and explore a career in Multimedia.

Occupational Outlook Handbook

Directions: Using your WEB browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm) If this address does not work, use a search engine to locate the current address. Use the handbook to research information on Multimedia careers. Select one career and summarize your findings in a two-page report. The report should include information on the following:

8. Nature of the work
9. Working conditions
10. Employment
11. Training and qualifications
12. Job outlook
13. Earnings
14. Related occupations

MULTIMEDIA

Name_____

Learning Objective: Upon completion of this activity, the student will be knowledgeable of business letter writing.

Multimedia: Final Letter

Directions: You have completed the multimedia unit. You will write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's Name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name)

First paragraph- Explain what you enjoyed or did not enjoy about multimedia.

Second paragraph- Explain three important things that you learned.

Third paragraph- Discuss what more you would have liked to have learned.

Sincerely,

Your Signature
Type your name under
your signature.

MULTIMEDIA
Name_____

Learning Objective: Upon completion of this activity, the student will know how to develop an interview.

Developing an Interview

Directions: Now that you have studied about multimedia and researched different jobs in the field, develop an interview consisting of seven questions that you can ask a person working in an area of multimedia development or presentation. Submit these questions to your teacher for approval. Go to **http://www.askanexpert.com** and e-mail your questions to an expert on the website.

1.

2.

3.

4.

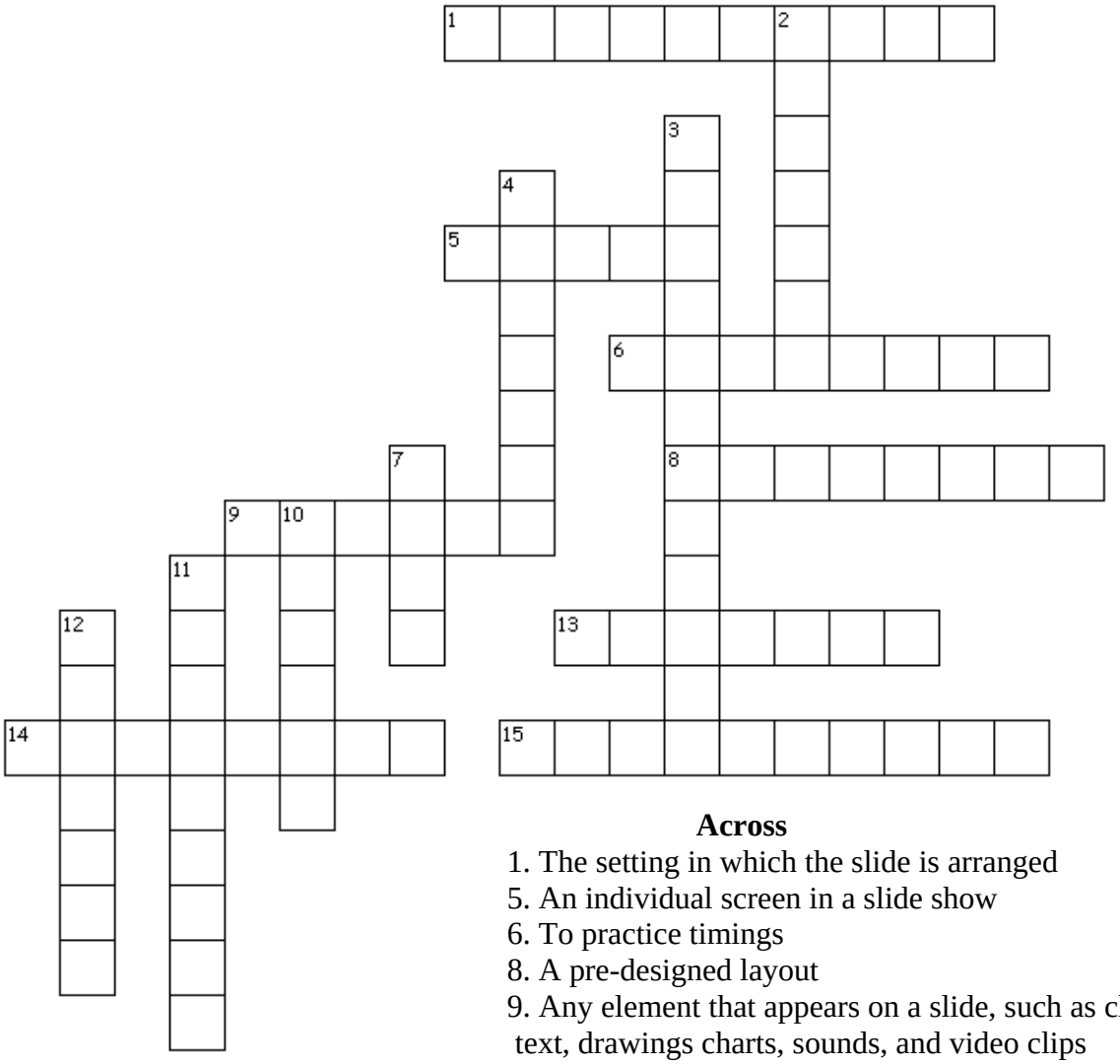
5.

6.

7.

MULTIMEDIA

Name_____



Across

1. The setting in which the slide is arranged
5. An individual screen in a slide show
6. To practice timings
8. A pre-designed layout
9. Any element that appears on a slide, such as clip art, text, drawings charts, sounds, and video clips
13. To add special visual or sound effects an object
14. Blending of two or more colors in a side to side or top to bottom fade
15. A special effect used to introduce a slide during a slide show

Down

2. A view of the titles and text of all your slides in one, easy to scroll page
3. The file you save to disk that contains all the slides, speaker's notes, handouts, etc. that make up your presentation
4. Pre-designed graphics that can be added to a slide
7. Writing or words
10. A text format where each sentence is marked with a small graphic like a dot or a star.
11. A series of slides displayed in sequence
12. Decorative text

MULTIMEDIA
Name_____

Learning Objective: Upon completion of this activity, the student will be familiar with the terminology used in multimedia.

Terminology

Directions: Write one to two paragraphs using as many words from the list as possible. Each word that you use will be worth 5 points. Points will be deducted for incorrect spelling and punctuation.

Slide	Develop
Slideshow	Create
Rehearse	Sound
Timings	Text
Font	Viewer
Color	Outline
Word Art	Storyboard
Object	Script
Clip art	Delete
Background	Import
Transition	Picture
Fade	Gradient
Stretch	Mixture
Fly	Visual
Crawl	Music

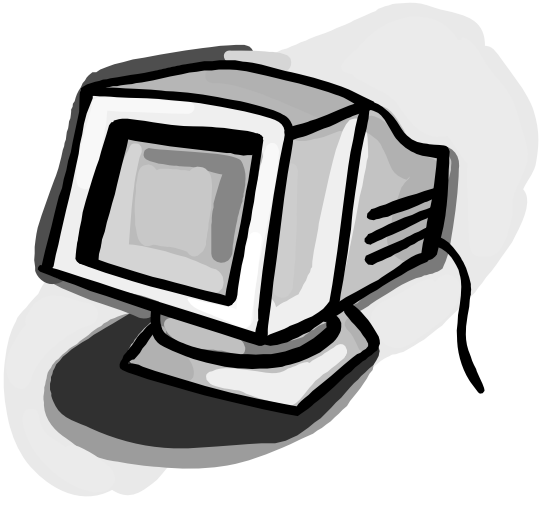
MULTIMEDIA
Name_____

Learning Objective: Upon Completion of this activity, the student will be able to distinguish between different file types used in multimedia presentations.

FILE TYPES!

Directions: Use the Internet to go to the web site www.abbre.com. Type in the file extensions and find what type of file they represent. Write graphic, music, video, text, document, or other on the line next to the file extension to show what it represents.

1. _____ (.avi)
2. _____ (.midi)
3. _____ (.gif)
4. _____ (.jpeg)
5. _____ (.wav)
6. _____ (.bmp)
7. _____ (.anm)
8. _____ (.app)
9. _____ (.doc)
10. _____ (.jpg)



PHOTOGRAPHY

PHOTOGRAPHY

Upon completion of the activities in this unit, students will:

- Become knowledgeable in the terminology associated with photography.
- Gain knowledge in the developing process used in photography.
- Have experiences in learning the functions and location of different camera parts.
- Possess the basic knowledge to develop their film.

PHOTOGRAPHY

Name _____

Learning Objective: Upon completion of this activity students will gain knowledge of the history of photography.

History of Photography

Directions: Using the Internet, textbooks, and/or periodicals research the following sentence starters and complete the statement in the form of a complete sentence. These items are listed in chronological order. Using this research write a one-page composition on the history of photography.

1) Camera obscura
2) The first breakthrough in light sensitive material came in 1725 when….
3) Joseph Niepce
4) Daguerreotypes
5) William Fox Talbot of England
6) The wet collodion process
7) Ferrotypes
8) Richard Maddox
9) James Maxwell, in 1861
10) The 100 shot box camera
11) George Eastman
12) Movie Film
13) French Autochrome
14) The flash bulb
15) Edwin Land

PHOTOGRAPHY

Name:_____

Learning Objective: Upon completion of this unit students will be able to define the different parts of the camera.

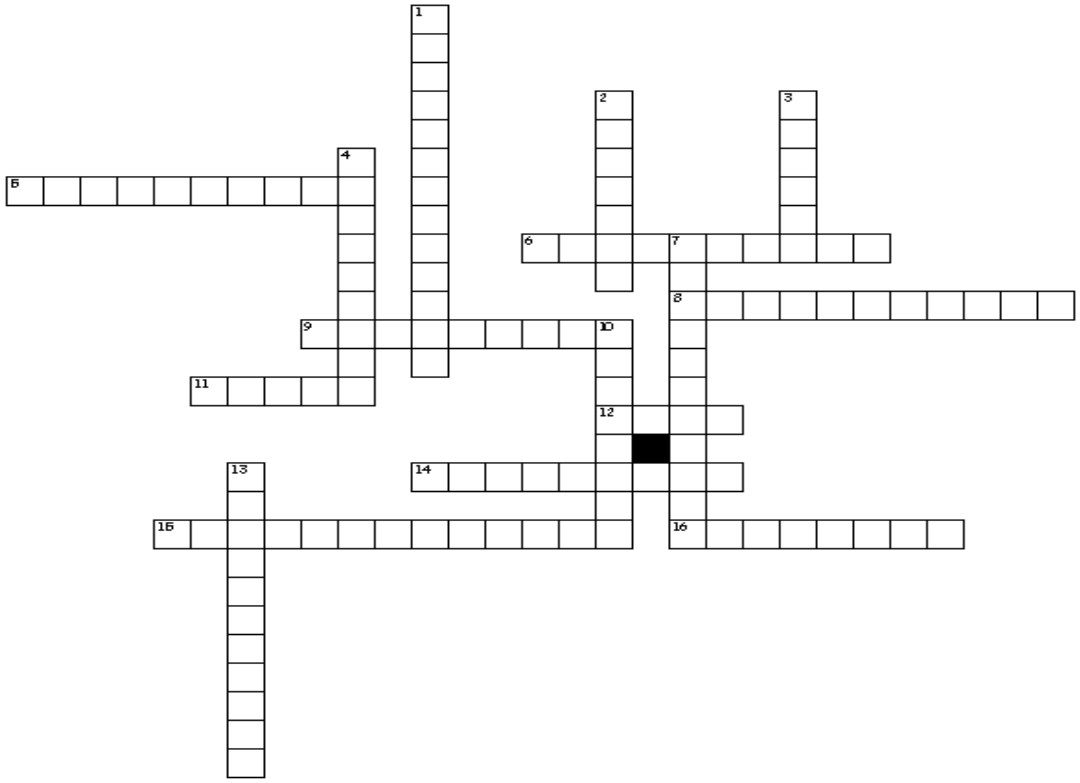
Basic Parts of a Camera

Directions: Fill in the blanks to complete the paragraph.

The first camera, about the size of a shoebox, was called a _____ _____. One end of the camera has a _____ which magnifies the size of the object be taken and the light intensity. The _____ blinks open for a very minute amount of time. The speed of this feature determines if moving objects will appear blurred or sharp in the picture. The _____, also known as a diaphragm, controls the amount of light that passes through the lens. On the back of the camera a _____ can be found. This feature allows one to view what will be in the picture before it is taken. The _____ is a feature, which moves the film forward. This operation sets up the camera for the next picture. These tools on today's cameras are usually automatic, but they can be manual.

PHOTOGRAPHY

PHOTOGRAPHY TERMS



Across

5. Determines how much area inside your picture will be sharp.
6. Allows you to view your picture before you take it.
8. An invisible image on the film.
9. Controls the amount of light that passes through the lens when the shutter is open.
11. Chemical that makes the photographic material no longer sensitive to light.
12. This part magnifies light intensity.
14. Reverse photographic images of your pictures on clear thin plastic.
15. The person who invented celluloid roll film.
16. Chemical used to stop the developing process and remove excess developer from the film.

Down

1. The name of the first camera.
2. Determines if moving objects will appear sharp or blurred.
3. A 3 legged stand used to hold the camera steady.
4. Chemicals that are used to bring out the latent image.
7. These move the film forward to set the camera for the next picture.
10. Light sensitive coating on film and photo paper.
13. Creating pictures using light energy.

PHOTOGRAPHY

Name:_____

Learning Objective: Upon completion of this unit students will be able to compare and contrast the different features between traditional and digital cameras.

Comparing Traditional and Digital Cameras

Directions: Research the characteristics and uses of traditional and digital cameras. Using this research answer the following questions.

What are the differences between traditional and digital cameras?

What same traits do traditional and digital cameras have?

What are your conclusions about the use of traditional and digital cameras?

PHOTOGRAPHY
Name:_____

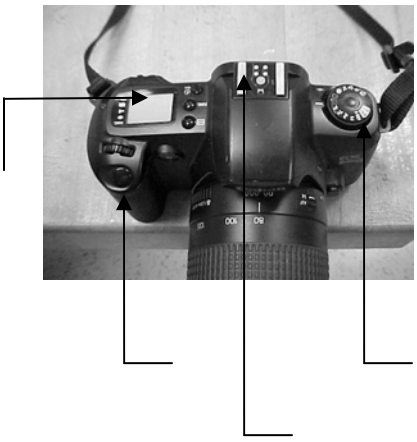
Learning Objective: Upon completion of this unit students will be able to define and locate the different parts of the camera.

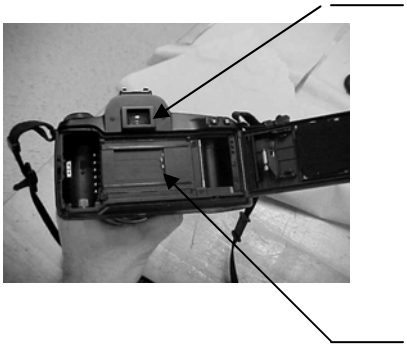
LABELING THE PARTS OF A CAMERA

Directions: Use the list of terms given to correctly label the camera parts below. After you have labeled the parts, write a complete sentence for each part, which explains or defines the part's function.

Terms:

1) focusing ring
2) view finder
3) film compartment
4) battery compartment
5) lens
6) panel display
7) shutter release button
8) shutter speed dial
9) accessory shoe





PHOTOGRAPHY

Name _____

Learning Objective: Upon completion of this activity students will gain basic techniques in taking a picture.

BASIC PICTURE TAKING TECHNIQUES

Directions: Unscramble the words in each sentence to make the best statement describing photography techniques. Rewrite the sentences correctly on your own paper, using capital letters and periods. Use the following statements as a study guide.

1. film size choose and speed correctly film
2. use necessary flash when
3. close get
4. level at get eye
5. out center of subject keep exact
6. busy subject keep
7. ready be
8. film heat from protect
9. steady keep camera
10. the simple keep background
11. a tell story
12. correctly focus
13. battery check
14. vantage good choose point
15. faces close get
16. for head groups level different have
17. vertical pictures use and horizontal
18. foreground to subject frame include
19. lens clean keep
20. correctly frame
21. on sun glare lens watch

PHOTOGRAPHY

Name _____

Learning Objective: Upon completion of this activity students will learn the differences between the six types of lenses.

Types of Lenses

Directions: Define the following lenses then on your own paper write a short summation describing each of their differences.

Normal lenses-

Wide angle lenses-

Telephoto lenses-

Zoom lenses-

Auto-focus lenses-

Special-purpose lenses-

PHOTOGRAPHY

Name _____

Learning Objective: Upon completion of this activity students will gain the knowledge needed to develop film correctly.

Developing Process

Directions: Define the following terms then write a descriptive paragraph on the film developing process, which will instruct the reader how to properly develop film from start to finish.

Stop Bath -

Fixer-

Water Wash-

Developer-

Negatives-

Latent Images-

PHOTOGRAPHY
Name:_____

Learning Objective: Upon completion of this activity students will learn photography terminology.

Photography Terms

Directions: Unscramble each of these words. Then unscramble the letters that fall inside the squares to find the missing statement.

DEORELVEP

TOSP HABT

RIXFE

NELS

RUAPAREPTE

HLFSA

REIWND

MIFL

GNEVTEAI

TEALTN GEAMI

FIML SEEPD

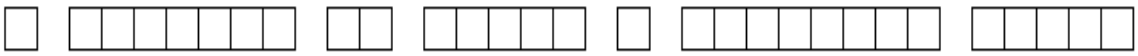
REDFINWEVI

REHTUST

TEUSTHR RESELEA OTNUTB

TOELOTPEH NELS

CIPURTE



PHOTOGRAPHY
Name:_____

Learning Objective: Upon completion of this activity students will learn about the many career opportunities in photography.

Careers in Photography

Directions: Below are listed opportunities in photography. Research one that is of great interest to you. When you have gathered enough information, create a colorful, attention getting flyer, which contains your data in an informative way.

Wedding and Portrait Photographers

Law Enforcement Photography

Architectural Photography

Scientific Photography

Photography In The Armed Forces

Newspaper Photography

Free-Lance Photography

Fashion Photography

Action Photography

PHOTOGRAPHY

Name:_____

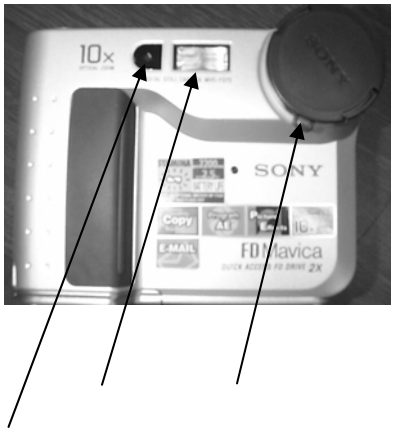
Learning Objective: Upon completion of this unit students will be able to define the different parts of a digital camera.

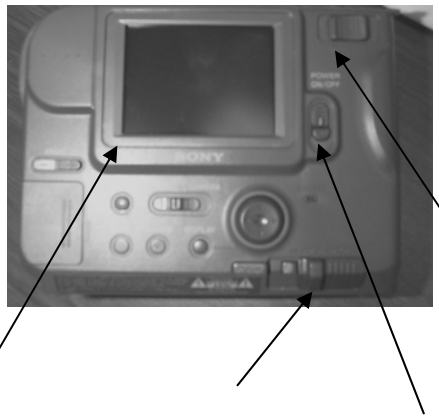
BASIC PARTS OF A DIGITAL CAMERA

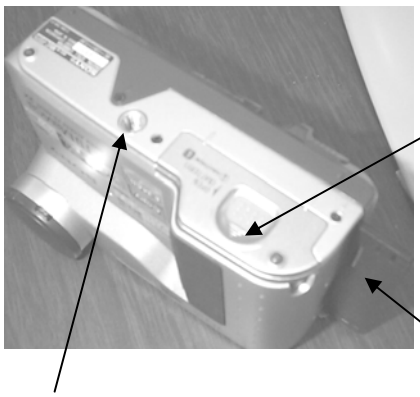
Directions: Use the list of terms given to correctly label the digital camera parts below. After you have labeled the parts, write a complete sentence for each part, which explains or defines the part's function.

Terms:

1) Flash Emitter
2) LCD Screen
3) Disk Eject Lever
4) Photocell Window
5) Tripod Receptacle
6) Power Switch
7) Zoom Lever
8) Floppy Disk Slot
9) Battery Compartment
10) Lens







PHOTOGRAPHY

Name:_____

Learning Objective: Upon completion of this unit students will be able to define the different digital coloring systems and file formats used in digital photography.

Digital Photography

Directions: Answer the following short answer questions.

What is RGB color, and why is it important to digital photography?

What is CMYK color, and why is it important to digital photography?

What is HSB color, and why is it important to digital photography?

Explain how the bitmap file format is different from the TIFF file format?

Explain how a GIF file format is different from a JPEG file format?

Explain how a PICT file format is different from an EPS file format ?

In general, how does file compression work?

PHOTOGRAPHY

Name:_____

Learning Objective: Upon completion of this unit students will be gain knowledge in how photography helps to preserve our history.

Preserving History

Directions: Research the following photographers and explain in a one-page report how they each helped to preserve the early history of the United States through photography.

1) Matthew Brady
2) Alexander Gardner
3) Timothy O'Sullivan

PHOTOGRAPHY

Name:_____

Learning Objective: Upon completion of this unit students will understand the achievements of several dedicated pioneers.

Pioneers of Photography

Directions: Unscramble each of the pioneers' names then write a brief summation on each of their achievements in the field of photography.

LIMAIWL XOF BOLTAT

JSHEOP PENIEC

LOSUI DEGREEUA

GEEGOR SNTAMEA

WADERD LADN

PHOTOGRAPHY

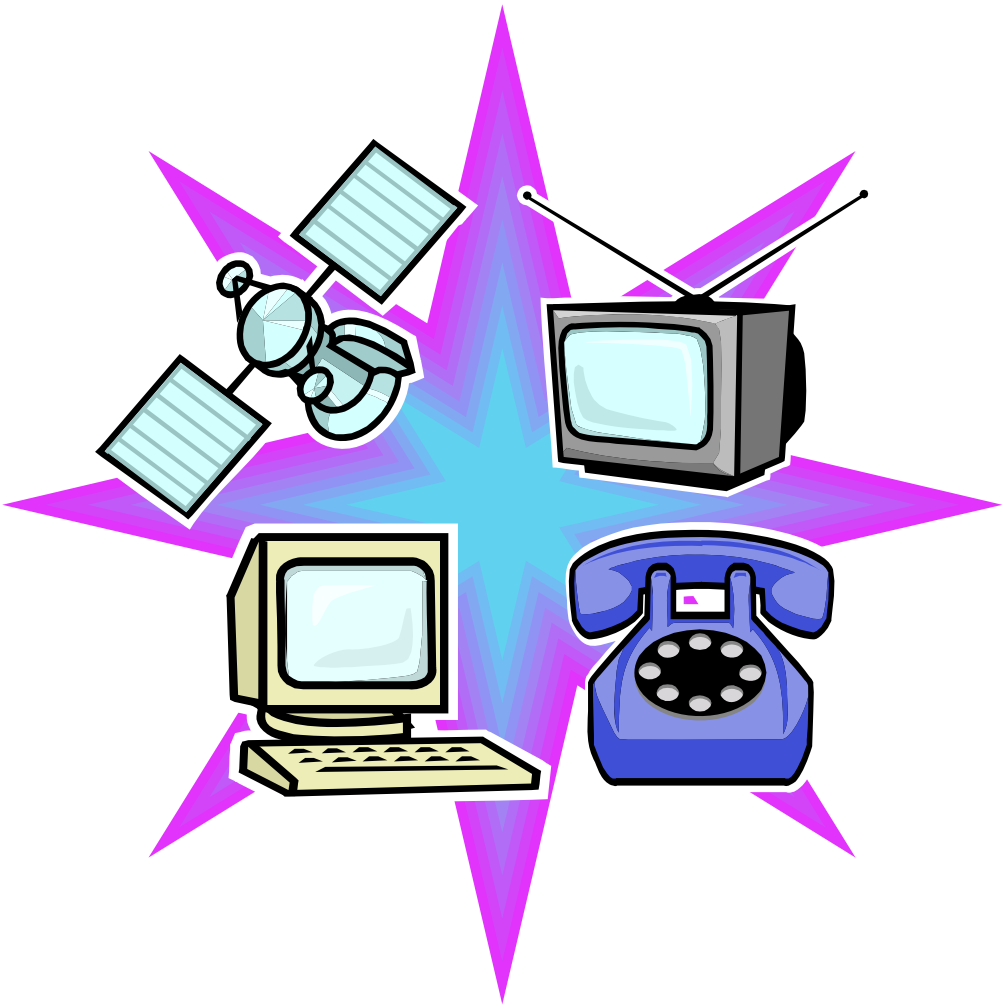
Name:_____

Learning Objective: Upon completion of this unit students will understand the process of instant photography.

Instant Photography

Directions: Research Edward Land's invention of instant photography, which Polaroid, Inc. has capitalized on since 1947. From this research, write a paragraph which includes the process that Edward Land went through to invent this type of camera, how the picture instantly appears after removing it from the camera, and how Polaroid converted the original black and white instant photograph to a color photograph.

Telecommunications Technology



TELECOMMUNICATIONS TECHNOLOGY

Upon completion of the activities in this unit, students will:

- improve written communication skills in the Telecommunications area.
- expand their technical vocabulary in the Telecommunications area.
- apply the creative and organizational skills required to write short essays.
- improve basic knowledge and use of the internet.
- practice basic research and documentation of information.

TELECOMMUNICATIONS TECHNOLOGY

Name_____

Learning Objective: Upon completion of this activity, the student will be able to differentiate among the different types of communication.

Understanding Communication

Directions: Telecommunication is communication at a distance. For each type of communication listed below, a) explain what each means in your own words, b) give a real-life example of each type of communication, and c) explain how each is an example of telecommunications. Use complete sentences when writing your explanations.

People-to-People Communication

a)

b)

c)

People-to- Machine Communication

a)

b)

c)

Machine-to-People Communication

a)

b)

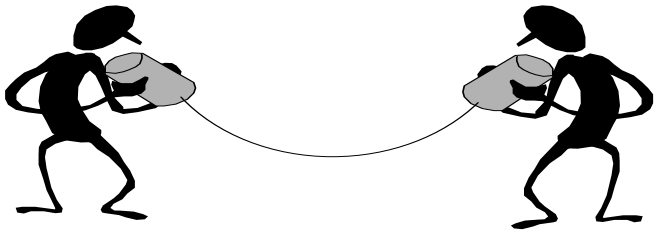
c)

Machine-to-Machine Communication

a)

b)

c)



TELECOMMUNICATIONS TECHNOLOGY

Name_____

Learning Objective: Upon completion of this activity, the student will be able to create a word search using the Internet.

Brainstorm

Directions: Use the space below to brainstorm for words that relate to telecommunications. List at least 15 words. Then using the computer, go to www.puzzlemaker.com to create a word search using the words in your list.

Brainstorm:

Directions for creating a word search using www.puzzlemaker.com

7. Once at the website, choose word search from the puzzle types list. Click go.
8. Enter a title for your puzzle.
9. Skip to step five and enter your words. You can simply put a space between words.
10. Check to make sure that all of your words are spelled correctly.
11. Click create a printable version.
12. Print two copies, one to turn in to your teacher, and one for you to complete.

TELECOMMUNICATIONS TECHNOLOGY

Name_____

Learning objective: Upon completion of this activity, the student will be familiar with common terminology used in telecommunications.

The World of Communication

Directions: Fill in the blank with the correct word from the list below. You may use words more than once and you will not use all of the words.

Word List

transfer	communication	places	receiver	person	verbal
person	conversation	machines	translate	automatic	danger
electronic	non-verbal	programmers	answering	alarm	sound
burglarized	machine	signals	acceptance	systems	world
travel	communicate	sender	inform	call	games

Communication is the _____ of information from sender to receiver. To have _____ you need to have a _____, a message, a _____ and feedback. The receiver may be a _____, an animal, or a type of machine. Most communication is person to_____. An example of this lies in everyday _____. When two people talk it is called _____ communication. The use of signals or pictures to communicate is referred to as _____ communication.

In the past, the only type of communication was person - to -person. Not until the development of _____communication did people begin communicating with _____. Examples of this type of communication are computer _____, using a controller to play video _____, leaving messages on _____ machines, and setting _____ timers to run irrigation systems.

An example of machine to people communication is the _____ system installed in a car that sounds when it is _____. Smoke detectors also _____ when they sense fire to warn families of _____.

With the advances that brought the Internet came _____to _____ communication. _____ are sent through telephone wires that are interpreted by computers across the world. To print a document, your computer must _____ with your printer. This is another example of machine- to- machine communication.

Our communication _____ have made us more aware of different cultures around the _____. The Internet has made it possible to _____ to many far away _____. The exposure to different customs can hopefully lead to less prejudice and more _____ of others.

TELECOMMUNICATIONS TECHNOLOGY

Name_____

Learning objective: Upon completion of this activity, the student will be able to place technological advances the telecommunications in the correct chronological order.

Telecommunications Timeline

Directions: Below is a list of inventions in the world of telecommunications. Arrange the inventions in chronological order from the earliest to the most recent. Write one to two complete sentences explaining how each item is or was used.

1. Digital Cellular Phone
2. Analog Telephone
3. Digital Telephone
4. Facsimile
5. Telegraph
6. Internet
7. Global Positioning System
8. Fiber optic system
9. Digital Satellite Link
10. Television
11. Automatic teller machines
12. Video conferencing
13. Pony Express

Extension: Locate a photograph of each object. Make a timeline combining your pictures with your explanations of each invention.

TELECOMMUNICATIONS TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity, the student will know how to send a fax .

Sending a Fax

Directions: Write a complete set of instructions on how to send a fax. You may do this in paragraph form or in list form. Make sure to use complete sentences and correct punctuation. You may draw pictures if needed. These instructions should be short and concise.

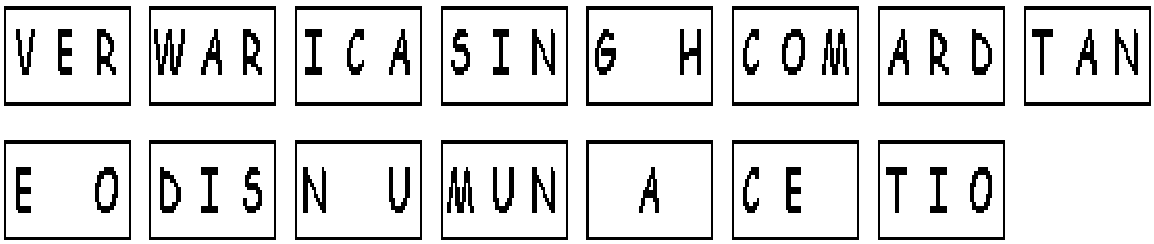
Instructions for sending a fax:

TELECOMMUNICATIONS TECHNOLOGY

Name_____

Directions: Cut out the tiles and unscramble them to reveal a message. Glue them in the empty tiles below.

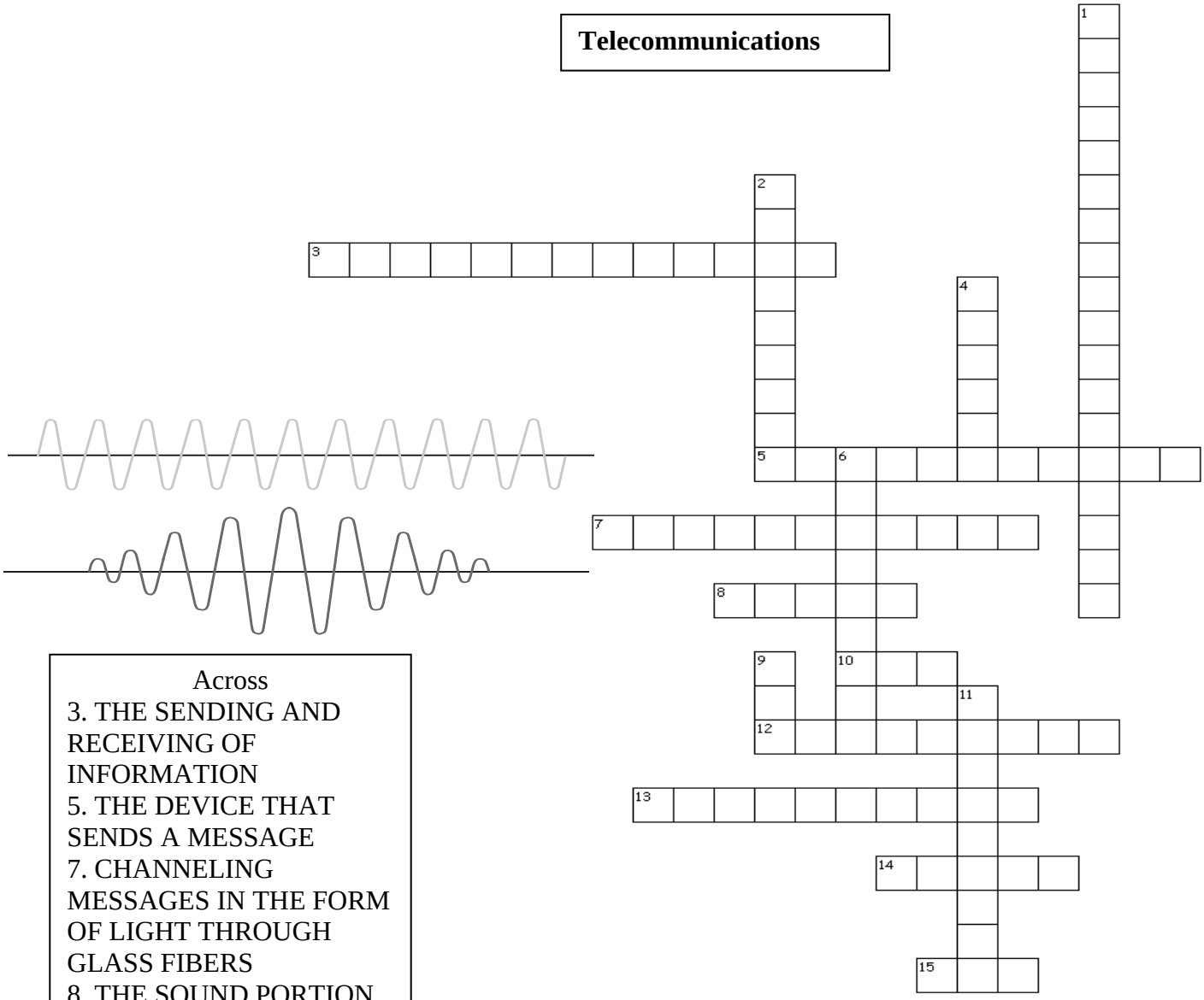
What is telecommunications?



TELECOMMUNICATIONS TECHNOLOGY
Name _____

Directions: Use the clues to fill in the puzzle.

Telecommunications



Across

3. THE SENDING AND RECEIVING OF INFORMATION
5. THE DEVICE THAT SENDS A MESSAGE
7. CHANNELING MESSAGES IN THE FORM OF LIGHT THROUGH GLASS FIBERS
8. THE SOUND PORTION OF A MESSAGE
10. ULTRA HIGH FREQUENCY
12. THE NUMBER OF CYCLES THAT PASS SOME POINT IN ONE SECOND
13. FREQUENCIES WITHIN THE ELECTROMAGNETIC SPECTRUM
14. NUMBER OF CYCLES PER SECOND
15. SHORTENED FORM OF KILOHERTZ

Down

1. COMMUNICATION OVER A DISTANCE USING A TYPE OF HARDWARE
2. TO SEND RADIO WAVES THROUGH THE AIR CARRYING THE SIGNAL FROM THE SENDER TO THE RECEIVER
4. TO TELL OR MAKE KNOWN
6. MEASURES THE STRENGTH OF A WAVE
9. VERY HIGH FREQUENCY
11. EARLY COMMUNICATION APPARATUS FOR COMMUNICATION AT A DISTANCE BY CODED SIGNALS

TELECOMMUNICATIONS TECHNOLOGY

Name_____

FIND IT!

Directions: Locate the list of words in the puzzle.

N	S	E	R	A	T	R	A	V	E	L	E	T	E	Q
C	O	S	T	L	N	S	O	U	N	D	L	R	N	T
I	U	I	Y	A	A	S	E	M	A	G	E	A	I	N
T	S	R	T	S	L	B	W	L	L	S	C	N	H	O
A	P	E	C	A	T	S	R	E	R	E	T	S	C	I
M	L	G	N	O	C	E	N	E	R	M	R	F	A	T
O	A	N	X	I	M	I	M	A	V	I	O	E	M	A
T	C	A	L	L	H	M	N	S	R	W	N	R	Q	S
U	E	D	C	G	A	C	U	U	E	T	I	G	I	R
A	S	K	M	R	A	L	A	N	M	N	C	P	N	E
W	S	I	G	N	A	L	S	M	I	M	D	H	F	V
S	N	O	N	V	E	R	B	A	L	C	O	E	O	N
U	R	E	C	N	A	T	P	E	C	C	A	C	R	O
P	B	U	R	G	L	A	R	I	Z	E	D	T	M	C
R	E	V	I	E	C	E	R	E	N	O	S	R	E	P

ACCEPTANCE	ALARM	ANSWER	AUTOMATIC
BURGLARIZED	CALL	COMMUNICATE	COMMUNICATION
CONVERSATION	DANGER	ELEDTRONIC	GAMES
MACHINE	NONVERBAL	PERSON	PLACE
PROGRAMMERS	RECEIVER	SENDER	SIGNAL
SOUND	SYSTEMS	TRANSFER	TRANSLATE
TRAVEL			

TELECOMMUNICATIONS TECHNOLOGY

Name_______________

Directions: Complete the word search below. Unscramble the remaining letters to fill in the missing phrase about telecommunications.

Telecommunications

C	Y	F	R	C	T	S	O	B	M	S	R	M	U	N
E	H	C	Y	A	C	P	R	N	E	I	E	C	O	E
V	T	C	N	I	L	O	I	V	A	X	T	I	E	T
S	L	A	S	E	A	U	A	R	E	T	T	I	D	I
E	E	Y	C	D	U	W	L	L	C	A	I	E	I	L
R	H	L	C	I	T	Q	P	L	L	S	M	D	V	L
P	E	A	P	C	N	I	E	U	E	E	S	U	S	E
O	S	I	E	I	L	U	D	R	T	C	N	T	E	T
T	N	R	R	U	C	O	M	S	F	U	A	I	G	A
O	I	V	M	R	M	N	Y	M	H	E	R	L	A	S
D	R	A	D	I	A	S	I	F	O	S	T	P	S	O
A	U	D	I	E	N	C	E	R	T	C	A	M	S	I
Z	T	R	E	H	A	G	E	M	P	N	C	A	E	D
E	I	S	E	V	A	W	O	I	D	A	R	P	M	U
D	E	R	I	W	D	R	A	H	E	R	T	Z	K	A

AMPLITUDE	AUDIENCE	AUDIO
BROADCAST	CARRIER	CELLULAR
COMMUNICATE	CYCLE	DIRECTWAVES
FREQUENCY	HARDWIRED	HERTZ
MEGAHERTZ	MESSAGES	MODULATION
MULIPLEX	PHYSICS	PRINCIPLES
RADIOWAVES	SATELLITE	SCRIPT
SYSTEM	TRANSMITTER	UHF
VHF	VIDEO	

— — — — — — — — — — — — —   — — — —   —

— — — — — — — —

TELECOMMUNICATIONS TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity, the student will be familiar with the terminology used in telecommunications.

Directions: Below are important terms in relation to telecommunications. Write one complete sentence to explain the meaning of each term.

Telecommunications-_____

Communication- _____

Telegraph-_____

Inform-_____

Persuade-_____

Mass media- _____

Analog-_____

Digital-_____

Phone transmitter- _____

Phone receiver-_____

Fiber optics-_____

Digital cellular- _____

Specialized mobile radio- _____

Spectrum- _____

Wavelength- _____

Video conferencing - _____

Wireless communication- _____

Extension: On your own paper, use these words to write a paragraph about telecommunications. Remember to use your best grammar and punctuation skills. Underline the words as you use them.

TELECOMMUNICATIONS TECHNOLOGY
NAME_____

Learning Objective: Upon completion of this activity, the student will be familiar with the terminology used in telecommunications.

Terminology

Directions: Write one to two paragraphs using as many words from the list as possible. Each word that you use will be worth 5 points. Points will be deducted for incorrect spelling and punctuation.

Word List

Telecommunication
Physics
Principles
Frequency
Hertz
Megahertz
Amplitude
Radio waves
Broadcast
Hard-wired
System
Cycle
Carrier
Audio
Video
Satellite
Muliplex
Script
Direct waves
Transmitter
Receiver
Mobile
Cellular

UHF
VHF
Modulation
High
Messages
Communicate
Produce
Optics
Audience
Develop

TELECOMMUNICATIONS TECHNOLOGY

Name_____

Learning Objective: Upon completion of this activity, the student will be knowledgeable of business letter writing.

Telecommunications: Final Letter

Directions: You have completed the multimedia unit. You will write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's Name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name)

First paragraph-Explain what you enjoyed or did not enjoy about telecommunications.

Second paragraph- Explain three important things that you learned.

Third paragraph- Discuss what more you would have liked to have learned.

Sincerely,

Your Signature
Type your name under
your signature.

TELECOMMUNICATIONS TECHNOLOGY

Name_____

Learning Objective: The student will use the Occupational Outlook Handbook on the Internet to research and explore a career in Telecommunications.

Careers in Telecommunications

Directions: Select two careers from the list below. Research the careers using the Internet, reference books, and/or the Georgia Career Information System (GCIS). Answer the research questions in note form. Do not copy information directly from your source. After you have finished answering the questions, select the one career that you are most interested in from the two that you have researched and write a one page paper about the career. Be sure to use the research in your paper and add more as necessary.

Audio Technician
Performance Engineer
Network Administrator
Editor
Freelance Writer
Graphic Designer
News Anchor
Reporter
Computer Technician
Computer Systems Analysts
Telephone Installers
Software Engineers
Computer Engineers
Telecommunications specialists

1. What type of educational training is involved to attain this career?
2. What exactly are the job duties of a person in this career?
3. What salary can be expected for someone starting out in this career?
4. What types of companies employ people with this type of training?

TELECOMMUNICATIONS TECHNOLOGY

Name _____

Learning Objective: The student will use the Occupational Outlook Handbook on the Internet to research and explore a career in Telecommunications.

Occupational Outlook Handbook

Directions: Using your WEB browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm) If this address does not work, use a search engine to locate the current address. Use the handbook to research information on Telecommunications careers. Select one career and summarize your findings in a two-page report. The report should include information on the following:

a. Nature of the work

b. Working conditions

c. Employment

d. Training and qualifications

e. Job outlook

f. Earnings

g. Related occupations

TELECOMMUNICATIONS TECHNOLOGY
Name_____

Learning Objective: Upon completion of this activity, the student will know how to develop an interview.

Developing an Interview

Directions: Now that you have studied about telecommunications and researched different jobs in the field, develop an interview consisting of seven questions that you can ask a person working in an area of telecommunications. Submit these questions to your teacher for approval. Go to **http://www.askanexpert.com** and e-mail your questions to an expert on the website.

1.

2.

3.

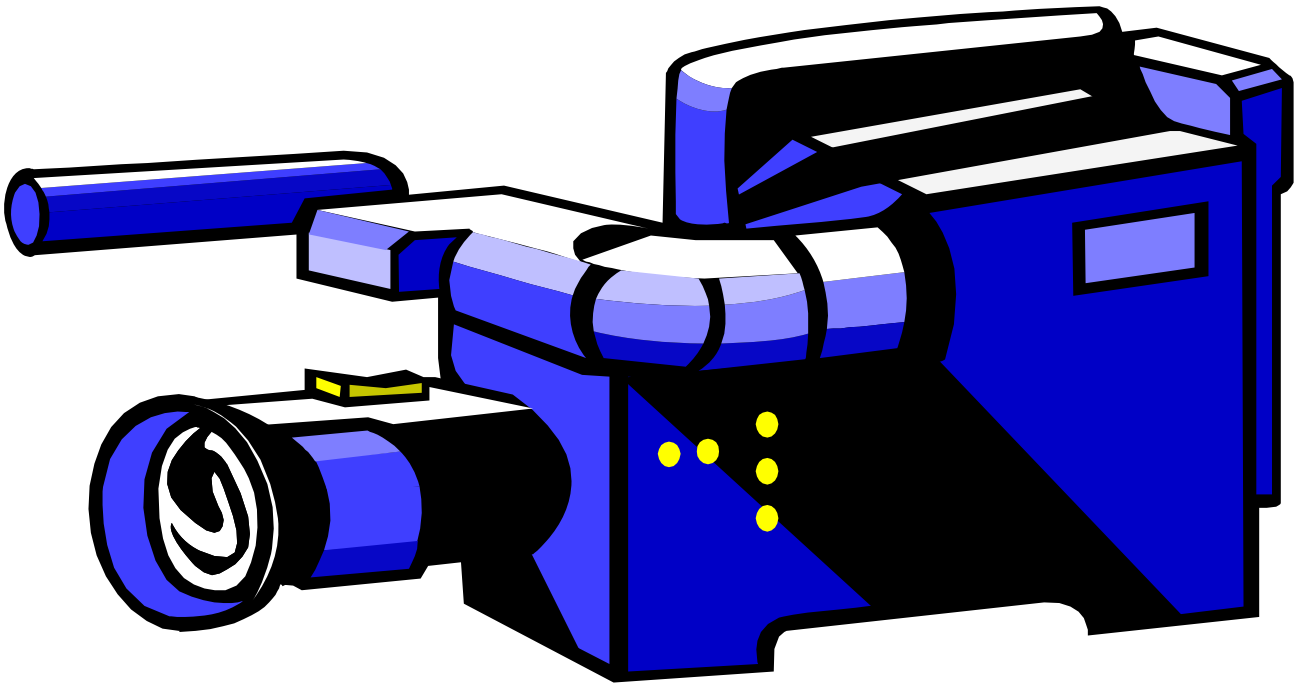
4.

5.

6.

7.

Video Broadcasting



VIDEO/BROADCASTING

Upon Completion of the activities in this unit, students will:

- Possess the ability to write about video broadcasting and video broadcasting terminology.
- Have experience with research based writing activities.
- Have gained knowledge of careers in the video broadcasting field.
- Have experience writing a business letter.
- Have a better broader video broadcasting vocabulary.
- Have learned several safety tips in dealing with video equipment.

VIDEO/BROADCASTING

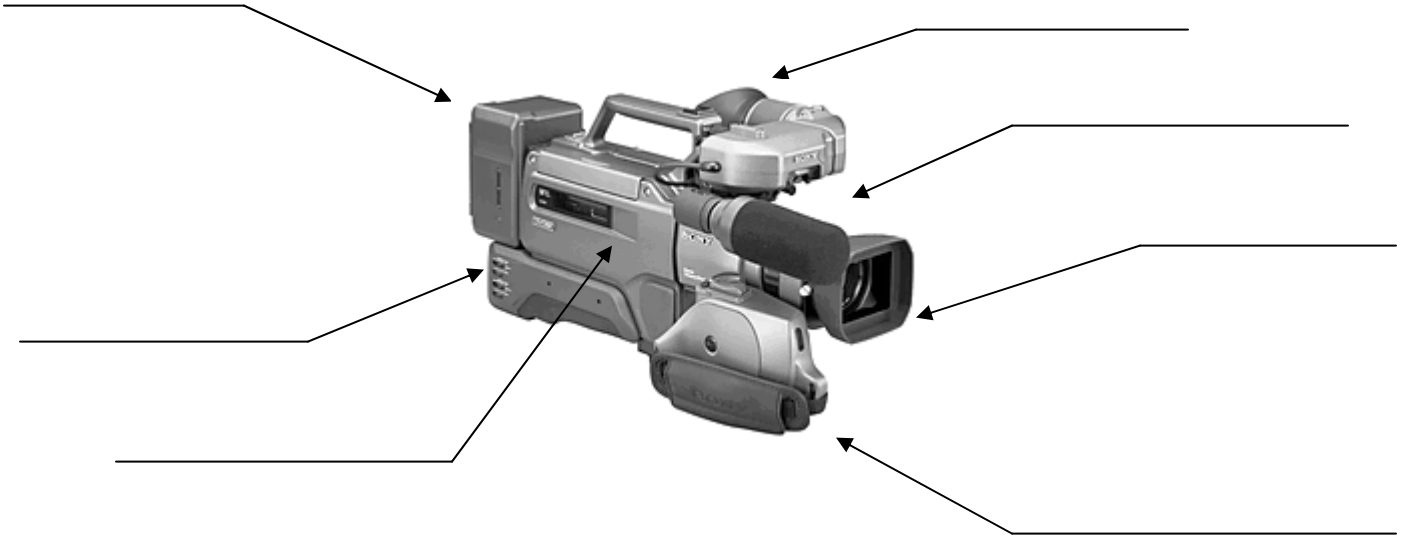
Name_____

Learning Objective: Upon completion of this activity students will have a better understanding of the video camera.

The Video Camera

Directions: Using the terms listed below, correctly identify and label the video camera pictured.

VCR Unit	View Finder	Microphone
Control Panel	Carrying Handle	
Battery	Camera Lens	



VIDEO/BROADCASTING

Name_____

Learning Objective: Upon completion of this activity, the student will have a better understanding of how to safely handle and care for video broadcasting equipment.

Safety of Equipment

Directions: You know that it is most important to handle video equipment properly. Using the words provided, complete the following sentences on proper equipment care.

Carrying Case	Recharged	Tripod	Sand
Tape	Damaged	Light Source	Store
Battery	Tape	Moisture	

1. Make sure the camera is stored safely in its _____. You don't want it to move around while being transported.

2. Remove the _____ and _____ after you finish using the camera.

3. _____ your equipment in a safe, cool, dark, dry place. You don't want to store it where it may be stolen, where it is very hot, where it will get a lot of sunlight, or where there is a lot of moisture.

4. Your battery should be _____ when it is completely empty and not before. If you do this when the battery is not empty it can cause the battery to have a short life.

5. Don't use _____ equipment. It may damage connected equipment that is working fine.

6. Don't touch the _____ itself. It will cause damage and cause it to not work properly.

7. Do not leave the camera on a _____ unless someone is there to watch over it. It may tip over causing extensive damage to the camera.

8. Do not point the camera directly at a bright _____. This can damage the camera's ability to "see". This damage can be permanent.

9. If _____ gets inside the camera, it can damage the sensitive internal parts, or the camera will automatically shut down until it dries out.

10. If there are strong winds blowing _____, beware that this may get inside the camera, causing it to malfunction, or it could cause damage to the camera lens.

VIDEO/BROADCASTING

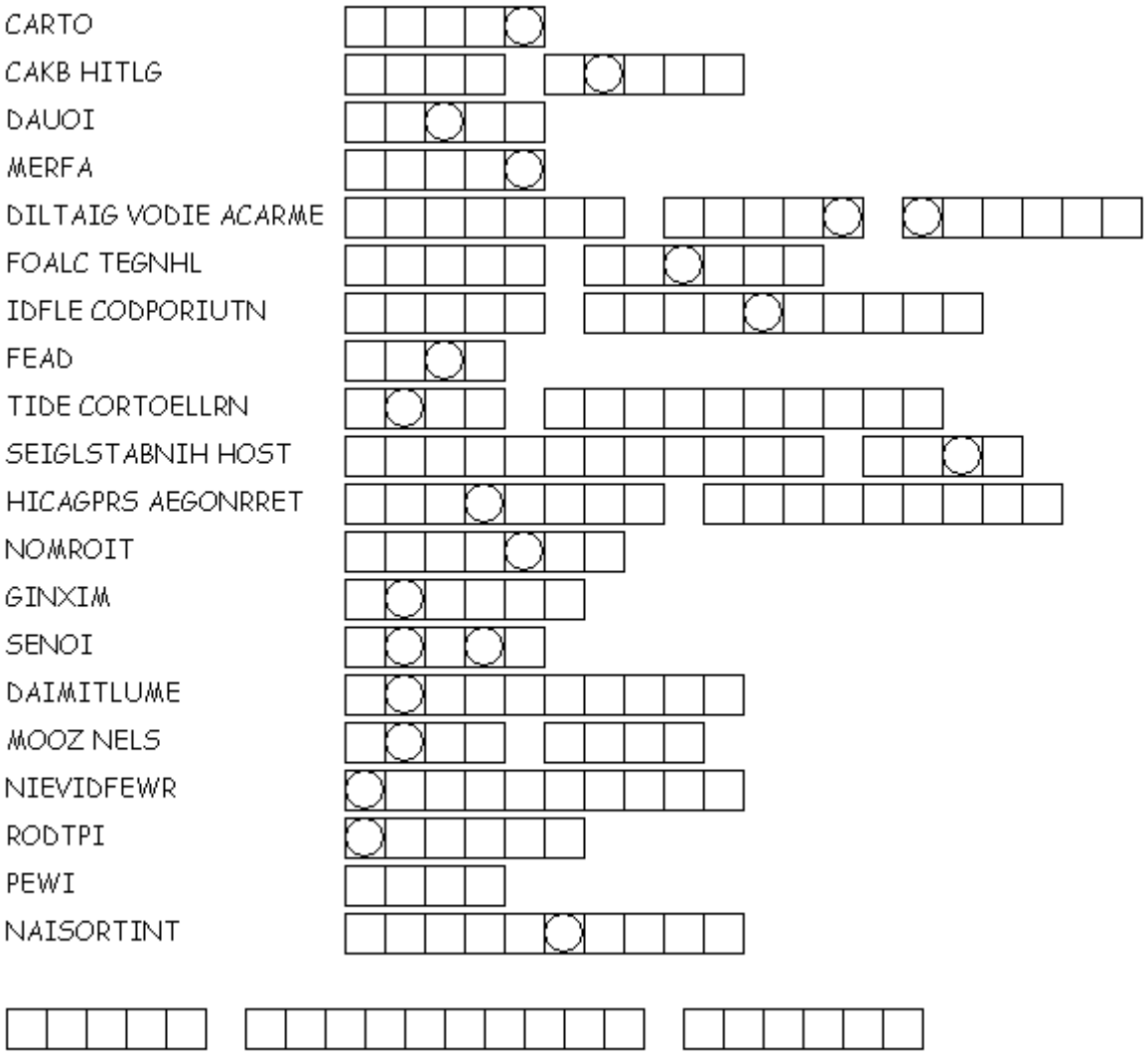
Name_____

Learning Objective: The student will have a better understanding of Video Production terminology upon completion of the puzzle.

Video Production Terminology

Directions: Unscramble each of the clue words.

Take the letters that appear in ◯ boxes and unscramble for the message.



VIDEO/BROADCASTING

Name_____

Learning Objective: Upon completion of this activity the student will be exposed to careers in the field of Video Broadcasting.

Occupational Outlook Into Video Broadcasting

Directions: Using your WEB browser, type in the following address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm). If this address doesn't work, use a search engine to locate the current address. Use the handbook to research information on occupations that involve transportation. Select one career and summarize in a two-page report what you discovered. Include the following:

1. Nature of work
2. Working conditions
3. Employment
4. Training and Qualifications
5. Job Outlook
6. Earnings
7. Related Occupations

VIDEO/BROADCASTING

Name_____

Learning Objective: Upon completion of this activity you should have a better understanding of a Video Production Career Activity.

Video Production: Career Opportunities

Directions: Choose a career that is of interest to you in the field of Video Production and gather information about it. When you have gathered the information, create a brochure that explains this career in an informative and creative way. The exact way you choose to do this will be your personal choice but, don't forget education needed, job description, employment opportunities, etc.

VIDEO/BROADCASTING

Name_____

Learning Objective: Students will display knowledge of Video Broadcasting terminology and improve writing skills.

Writing Activities

Directions: Using at least twenty of the terms listed below write a two-page essay on Video Broadcasting.

Analog Sound Recording	Dynamic Microphone	Location
Audio	Edit Controller	Mixing
Actor	Electronic News Gathering	Monitor
Back Light	Establishing Shot	Morphing
Camcorder	Fade	Multimedia
Cassette	Field Production	Noise
Chroma Key	Focal Length	Online Editing
Color Bars	Foot-Candle	Pan
Cut	Frame	Performer
Cue Card	Graphics Generator	Props
Desktop Video	HDTV	Producer
Digital Recording	Interactive Video	Studio
Digital Video Effects (DVE)	Lavaliere	Scenery
Dub	Lens	Teleprompter
DVD	Lighting	Transition
Electronic Field Production	Linear Video Editing	Zoom

VIDEO/BROADCASTING

Name_____

Performance Objective: Upon completion of this activity the student should be able to better understand how advertising is connected to video broadcasting.

Advertising

Directions: Write on one of the following topics.

1. Write an ad for the school newspaper to sell the video product your class just created in the Video Broadcasting module.

2. Write an essay explaining how video broadcasting affects your family.

3. As the head of advertising, it is your duty to compose two or three catchy sentences about the new video your class produced. Help to create an advertising promotional idea to sell the product. You will need to list slogans, create a commercial and produce a brochure on the product.

VIDEO/BROADCASTING

Name_____

Learning Objective: Upon completion of this activity, the student will have experience writing a business letter.

Video Broadcasting: Final Letter

Directions: You have completed the Video Unit. You will now write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's Name
Your School's Street Address
City, State & zip code

Dear (Teacher's Name),

First Paragraph: Explain what you did or did not enjoy learning about Video Production.

Second Paragraph: Explain three important things that you learned.

Third Paragraph: Discuss what more you would have liked to learn.

Sincerely,

Your Signature

Type your Name here.

VIDEO/BROADCASTING

Name _____

Learning Objective: Upon completion of this activity students will understand Video Production terms.

Video Production (on camera) Definitions

Directions: Define the key terms listed below on a separate sheet of paper.
Create a complete sentence for each key term to show your mastery of the word.

KEY TERMS

1. Researcher
2. Reporter
3. Producer
4. Teleprompter
5. Cue Card
6. Editorial
7. Story Board
8. Theme
9. Script
10. Commercial
11. Voice Quality
12. Content
13. Feature Story
14. Editorial
15. Straight News
16. Newscast
17. Public Service Announcement
18. Network
19. Grip
20. Director

VIDEO/BROADCASTING

Name _____

Learning Objective: Upon completion of this activity students will understand Video Production terms.

Video Production (Technical crew) Definitions

Directions:
1. Define the key terms listed below on a separate sheet of paper.
2. Create a complete sentence for each key term to show your mastery of the word.

KEY TERMS

11. Video Mixer
12. Transition
13. Lens
14. Animation
15. Audio
16. Editing
17. Switching
18. Panning
19. Chroma Key
20. Video Production Studio

11. Voice Quality
12. Sound Effects
13. Titles
14. Graphics
15. Hand Signals
16. Microphones
17. Back Light
18. Voice Over
19. Resolution
20. Video Camera

VIDEO/BROADCASTING

Name_____

Learning Objective: Students will demonstrate knowledge of Video Broadcasting related terminology and knowledge by writing on Video Broadcasting related topics.

Writing Activities

Directions: Select one of the following activities and using complete sentences, write on another sheet of paper an essay describing the process.

1. Describe in detail the job of a Video Producer.

2. Describe in detail how a video camera works.

3. Explain how the editing process works.

VIDEO/BROADCASTING

Name_____

Video Broadcasting Word Search

E N G R A P H I C S A R

S C O G N I T H G I L E

T O M I B A C K D R W L

A N R O T A R E N E G L

B T A A N C M A P C N O

L R R C R I U A U U I R

I A B I T E T D B D X T

S S C L P O M O O O I N

H T U O E O R A R R M O

I M W D F A D E C P P C

N O I S S I M S N A R T

G V I E W F I N D E R P

Word List

ACTOR	AUDIO	BACK
CAMERA	CONTRAST	CONTROLLER
ESTABLISHING	FADE	FOCAL
GENERATOR	GRAPHICS	LIGHT
LIGHTING	MIXING	MONITOR
MULTIMEDIA	PRODUCER	PRODUCTION
TRANSMISSION	TRIPOD	VIDEO
VIDEOTAPE	VIEWFINDER	

VIDEO/BROADCASTING

Name_____

Learning Objective: To show an understanding of video production terminology.

Video Broadcasting Terminology

Directions: Below are important terms in relation to Video Broadcasting. Write one complete sentence to explain the meaning of each term.

Video Editing	1. _____
Video Production	2. _____
Audio	3. _____
Digital Video Effects	4. _____
Video Camera	5. _____
Desktop Video	6. _____
DVD	7. _____
Monitor	8. _____
Producer	9. _____
Production Team	10. _____

Now use these words to write a paragraph about video broadcasting. Remember to use your best grammar and punctuation skills.

VIDEO/BROADCASTING

Name_____

Learning Objective: The student will demonstrate some knowledge of working practices, which should be followed regularly in and around video equipment.

Video Safety: General Guidelines

Directions: Listed below are several unsafe practices, which a safety conscious person should recognize as being hazardous. From these sentence fragments, make complete sentences to explain the accidents, which could occur if safety practices are not followed.

1. using a video camera in wet conditions
2. allowing faulty wiring to continue to be used
3. plugging several devices into an already crowded electrical outlet
4. having electrical cords lying all over the floor uncovered and tangled
5. leaving equipment running continuously
6. drinking around electrical equipment
7. filming a severe weather activity
8. overloading extension cords
9. removing grounding wires from your equipment
10. forcing a plug into an outlet
11. using lighting which has to high of a wattage for the fixture
12. replacing fuses with the wrong size fuse
13. using equipment which is in poor condition
14. not using a surge protector
15. continuing to use a piece of electronic equipment after it has given you a small shock

Weather

WEATHER

Upon Completion of the activities in this unit, students will:

- Possess the ability to write about weather and weather terminology.
- Have experience with research based writing activities.
- Have gained knowledge of careers in the weather field.
- Have experience writing a business letter.
- Have a better broader weather vocabulary.
- Have more knowledge of weather safety.

WEATHER

Name_____

Learning Objective: Upon completion of this activity the student will be exposed to careers in the field of weather.

Occupational Outlook Into Weather

Directions: Using your WEB browser, type in the following address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm). If this address doesn't work, use a search engine to locate the current address. Use the handbook to research information on occupations that involve transportation. Select one career and summarize in a two-page report what you discovered. Include the following:

8. Nature of work
9. Working conditions
10. Employment
11. Training and Qualifications
12. Job Outlook
13. Earnings
14. Related Occupations

WEATHER

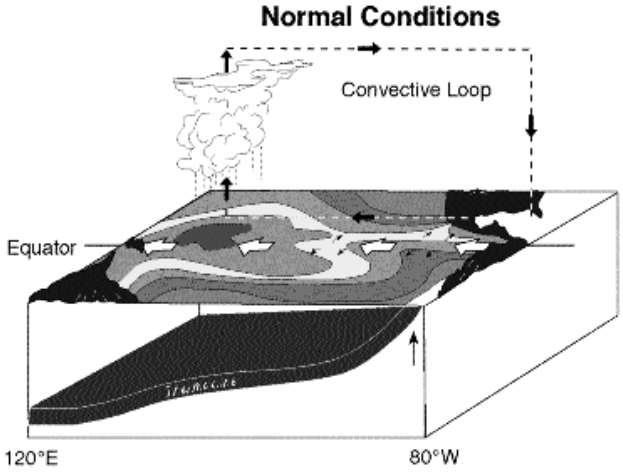
Name_____

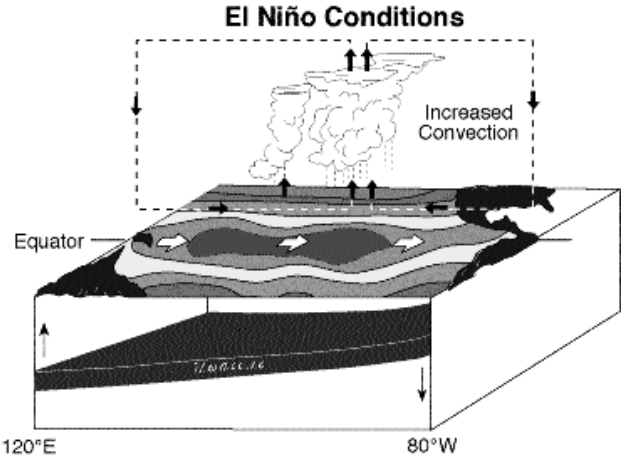
Performance Objective: Upon completion of this activity the student will have a better understanding of El Nino and how it affects us.

El Nino & La Nina

Directions: Go to the following website (http://www.pmel.noaa.gov/tao/elnino/nino-home.html) and find the answers to the following questions. Write the questions and the answers in complete sentence form on a clean sheet of notebook paper.

4. What is El Nino?
5. What is La Nina?
6. Why does El Nino occur?
7. Why does La Nina Occur?
8. What are some of the impacts of El Nino and La Nina?
9. How do we detect El Nino's?
10. What is the relationship between the greenhouse warming, El Nino, and La Nina?
11. What is the current El Nino forecast?
12. Do El Nino's only occur in the Pacific Ocean?
10. Why is it called El Nino?





WEATHER

Name_____

Learning Objective: Upon completion of this activity, students will think about the challenges their local area has faced due to weather.

Local Weather

Directions: Use complete sentences to answer each question. Use your own notebook paper to complete this activity.

1. Hundreds of weather incidents happen every year in your local area. What are some of the most common weather activities encountered in your area?

2. What are some of the more uncommon weather phenomenon in your area?

3. What was the most dangerous and destructive weather activity to occur in the last 100 years in your local area?

4. What were some of the problems encountered in dealing with this destructive weather?

5. What precautions have been taken to ensure the safety of people and property since this last major destructive weather incident?

6. What types of precautions does your school take in case of severe weather?

7. Does a career in the field of weather technology sound interesting to you? Why or why not? What challenges do you think would be particularly frustrating?

8. Describe a particularly memorable experience you have had which was caused by the weather?

WEATHER

Name_____

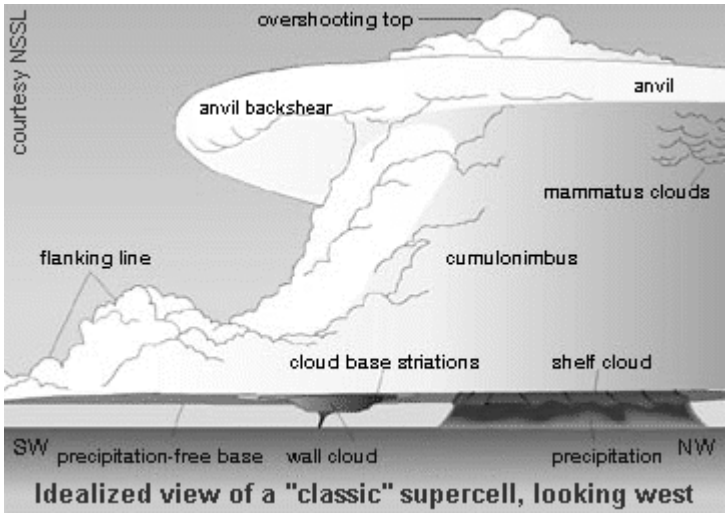
Performance Objective: Upon completion of this activity the student will have a better understanding of Tornadoes and how they affect us.

Tornadoes

Directions: Go to the following website about Tornadoes, with Frequently Asked Questions on Tornadoes (http://www.spc.noaa.gov/faq/tornado/index.html#History) and answer one of the following essay questions. Write the essay on a separate sheet of notebook questions.

1. Write an essay on T. Theodore Fujita describing his accomplishments and how he came to be known as "Mr. Tornado".
2. Describe what a tornado is and how it is formed.
3. Why are tornadoes in the northern hemisphere different from tornadoes in the southern hemisphere?
4. Can you forecast a tornado, and if so how?
5. Tell about some of the most significant tornadoes in U. S. History in the last 100 years. Where did they occur and how much damage did they cause.

Creator of the Tornado: The SUPERCELL



Idealized view of a "classic" supercell, looking west

WEATHER

Name_____

Learning Objective: Students will display knowledge of Weather terminology and improve writing skills.

Writing Activities

Directions: Using at least twenty of the terms listed below write a two-page essay on Weather and Weather Technology.

Absolute Humidity	Equinox	Lightning
Air Mass	Flash Flood	Low
Atmosphere	Fog	Microburst
Barometer	Freezing	Monsoon
Biosphere	Freezing Rain	NWS
Blizzard	Front	NEXRAD
Climate	Frost	Rain
Cloud Seeding	Fujita Scale	Rainbow
Cyclone	Funnel Cloud	Sleet
Dew	Greenhouse Effect	Solstice
Doppler Radar	Gulf Stream	Snow
Downburst	Hail	Storm Surge
Drizzle	Heat Lightning	Supercell
Drought	High	Thunder
Dry Line	Hurricane	Thunderstorm
El Nino	Jet Stream	Tornado

WEATHER

Name_____

Learning Objective: Upon completion of this activity you should have a better understanding of a Weather Career.

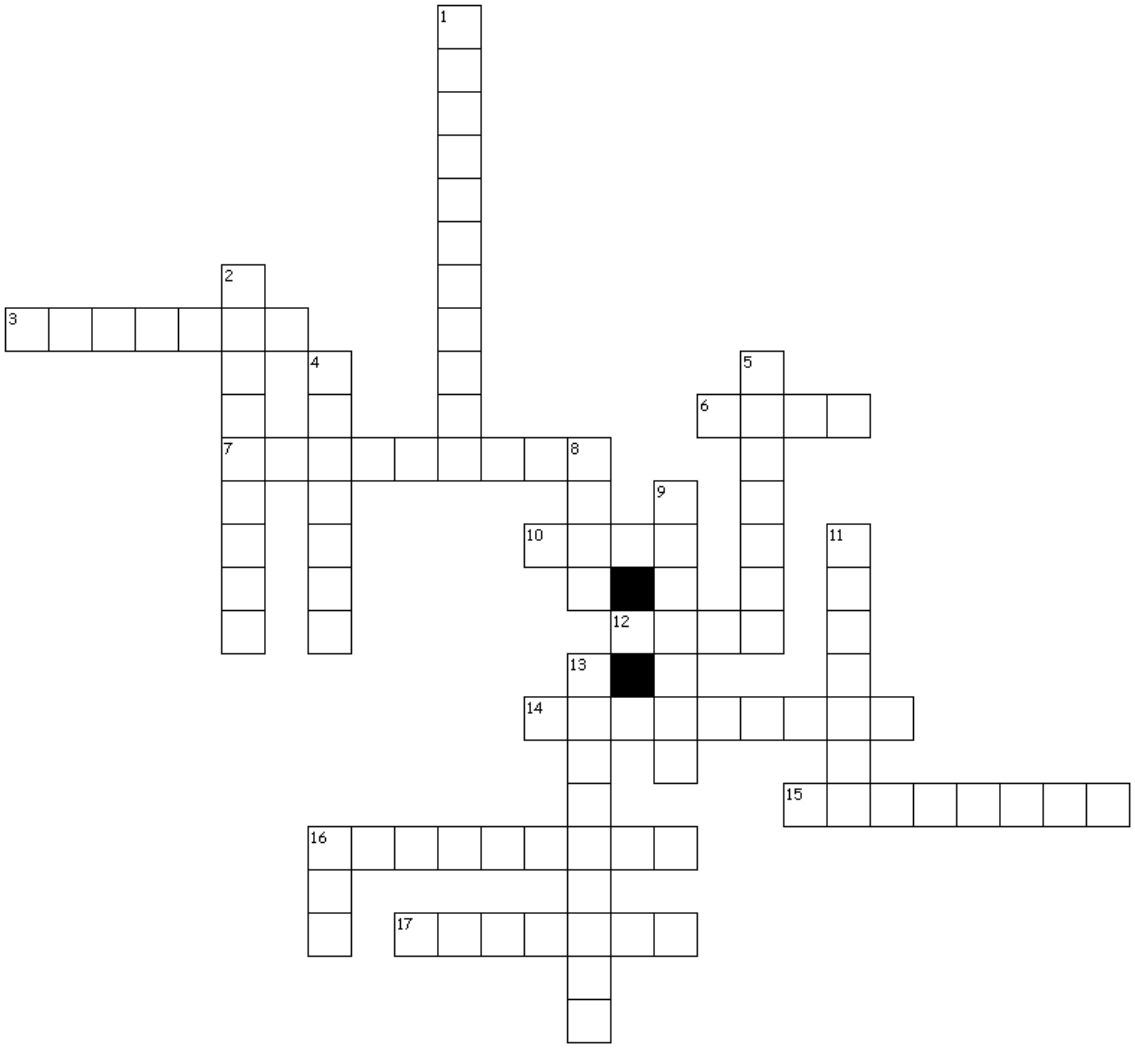
Weather: Career Opportunities

Directions: Choose a career that is of interest to you in the field of Weather and gather information about it. When you have gathered the information, create a brochure that explains this career in an informative and creative way. The exact way you choose to do this will be your personal choice but, don't forget education needed, job description, employment opportunities, etc.

WEATHER

Name_____

Learning Objective: Upon completion of this activity students will better understand Weather terminology.



Across

3. widespread persistent seasonal rains
6. balls of ice that grow in a thunderstorm
7. measures air pressure
10. an area of high atmospheric pressure
12. frozen precipitation
14. strong thunderstorm lasting hours
15. change of water from liquid to solid
16. visible discharge of electricity
17. average weather over a time period

Down

1. wind damage scale
2. wind blasting down in a thunderstorm
4. strong rotating column of air
5. arc of colored light caused by raindrops
8. falling water drops in a storm
9. sound produced by discharge of lightning
11. radar measures storm speed and direction
13. tropical storm
16. area of low atmospheric pressure

WEATHER

Name_____

Learning Objective: Upon completion of this activity, the student will have experience writing a business letter.

Weather: Final Letter

Directions: You have completed the Weather Unit. You will now write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's Name
Your School's Street Address
City, State & zip code

Dear (Teacher's Name),

First Paragraph: Explain what you enjoyed or did not enjoy learning about the weather.

Second Paragraph: Explain three important things that you learned.

Third Paragraph: Discuss what more you would have liked to learn.

Sincerely,

Your Signature

Type your Name here.

WEATHER

Name_____

Learning Objective: Upon completion of this activity, students will think about the challenges weather has created in the past.

Weather History Research

Directions: Use the questions below to guide your Internet research on the weather incident you selected. Use a separate sheet of paper to record your answers.

1. When and where did the weather incident you have selected to research take place?

2. What type of weather activity was the incident?

3. What were some of the special challenges that people faced when dealing with the weather incident? How did they overcome those challenges?

4. How long did it take to overcome the weather incident?

5. Approximately how people were affected by the weather incident and what kinds of long-term effects were caused.

6. Since the incident, what kinds of precautions have been taken to ensure the safety of people and properties in this area if this type of activity were to occur again?

7. Did you find any interesting stories about this incident? Any cool facts?

8. Has anything like this ever happened to you personally?

WEATHER

Name_____

WEATHER TERMINOLOGY WORD SEARCH

E R E H P S O M T A V T

R N K L L S F D R J H J

E X O E I U E E U U E I

H D E I N G T E N O N T

P T R N S E H D D V L E

S D E A M S E T E I N C

O L O O Z R E R N O N R

I N R P S Z S R L I A G

B A I T P I I C P D N O

B U O A O L Y L A E W G

R R R N R C E R B L D J

M D O W N B U R S T E K

ATMOSPHERE
BAROMETER
BIOSPHERE
BLIZZARD
CLOUD
CYCLONE
DEPRESSION
DOPPLER
DOWNBURST
FUNNEL
INVERSION
JET
LIGHTNING
RADAR
RAIN
SCALE
SEEDING
SLEET
STORM
THUNDERSTORM

WEATHER

Name_____

Learning Objective: Students will demonstrate knowledge of weather related terminology and knowledge by writing on weather related topics.

Writing Activities

Directions: Select one of the following activities and using complete sentences, write on another sheet of paper an essay describing the process.

1) Describe the greenhouse effect and give ideas on solutions to the problem.

2) Describe the creation of a thunderstorm.

3) Explain how weather and gravity cause the flowing of the oceans tides.

WEATHER

Name_____

Learning Objective: To show an understanding of weather terminology.

Weather Terminology

Directions: Below are important terms in relation to Weather. Write one complete sentence to explain the meaning of each term.

Barometer 1.
_____

Weather Front 2.
_____

Fujita Scale 3.
_____

Microburst 4.
_____

Jet Stream 5.
_____

Doppler Radar 6.
_____

Severe Thunderstorm 7.
_____

Wind Shear 8.
_____

Tropical Depression 9.
_____

Supercell 10.
_____

Now use these words to write a paragraph about weather. Remember to use your best grammar and punctuation skills.

WEATHER

NAME_____

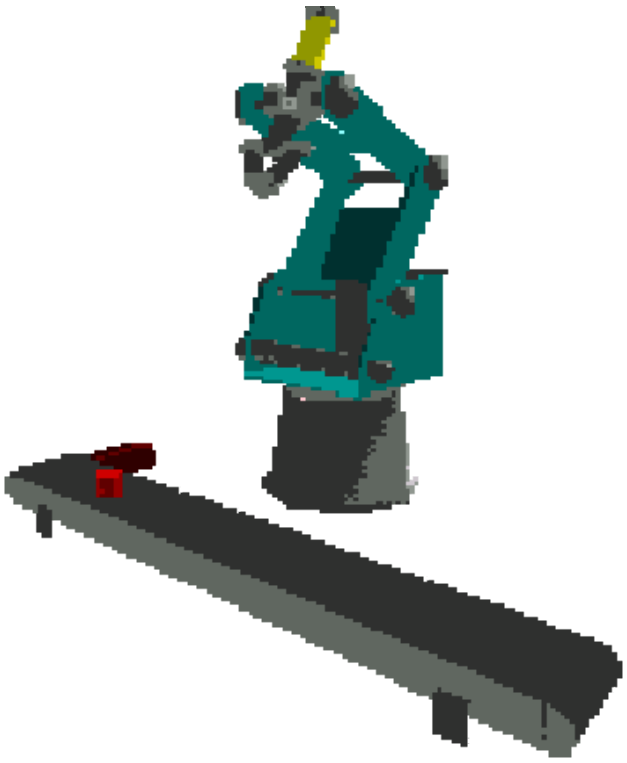
Learning Objective: The student will demonstrate some knowledge of safe weather practices, which should be followed regularly.

Weather Safety: General Guidelines

Directions: Listed below are several unsafe practices, which a safety conscious person should recognize as being hazardous. From these sentence fragments, make complete sentences to explain the accidents, which could occur if safety practices are not followed.

1. being outside around tall objects during electrical storms
2. staying in m car during a tornado
3. swimming during lightning, even if it is far away
4. ignoring a weather warning
5. standing in a crowd during an electrical storm
6. continuing to practice or play a game during a thunderstorm
7. not following my school weather safety plan
8. talking on the telephone during a severe storm
9. driving on a flooded street
10. standing near a window during a wind storm
11. being unprepared for a hurricane and disregarding warnings
12. traveling in a severe winter storm and disregarding warnings
13. leaving your car if it is stuck on a snowy road
14. ignoring a closed road sign after a severe storm
15. assuming water is not deep on a covered roadway

Physical



Systems

CONSTRUCTION

CONSTRUCTION

Upon the completion of the activities in this unit, students will:

- Possess the ability to write about construction and structural engineering terminology.
- Have experience with research based writing activities.
- Gain knowledge of careers in construction.
- Have experience writing a business letter and replying to a job advertisement.

CONSTRUCTION

Name _____

Learning Objective: Upon completion of this activity, students will be able to define certain construction terminology.

Construction Definitions

Directions: 1. Define the key terms listed below on a separate sheet of paper. 2. Create a complete sentence for each key term to show your mastery of the word.

Key Terms:

1. Site
2. Skyscraper
3. Geodesic Dome
4. Floor Plan
5. Concrete
6. Pre-cast
7. Foundation
8. Footing
9. Mortar
10. Joist
11. Sub-floor
12. Stud
13. Gable Roof
14. Rafter
15. Fiberglass
16. Caulking
17. Drywall
18. Prefabricated
19. Sub-grade
20. Asphalt

CONSTRUCTION
Name _____

Learning Objective: Upon completion of this activity, students will be able to define certain construction terminology.

Construction Definitions

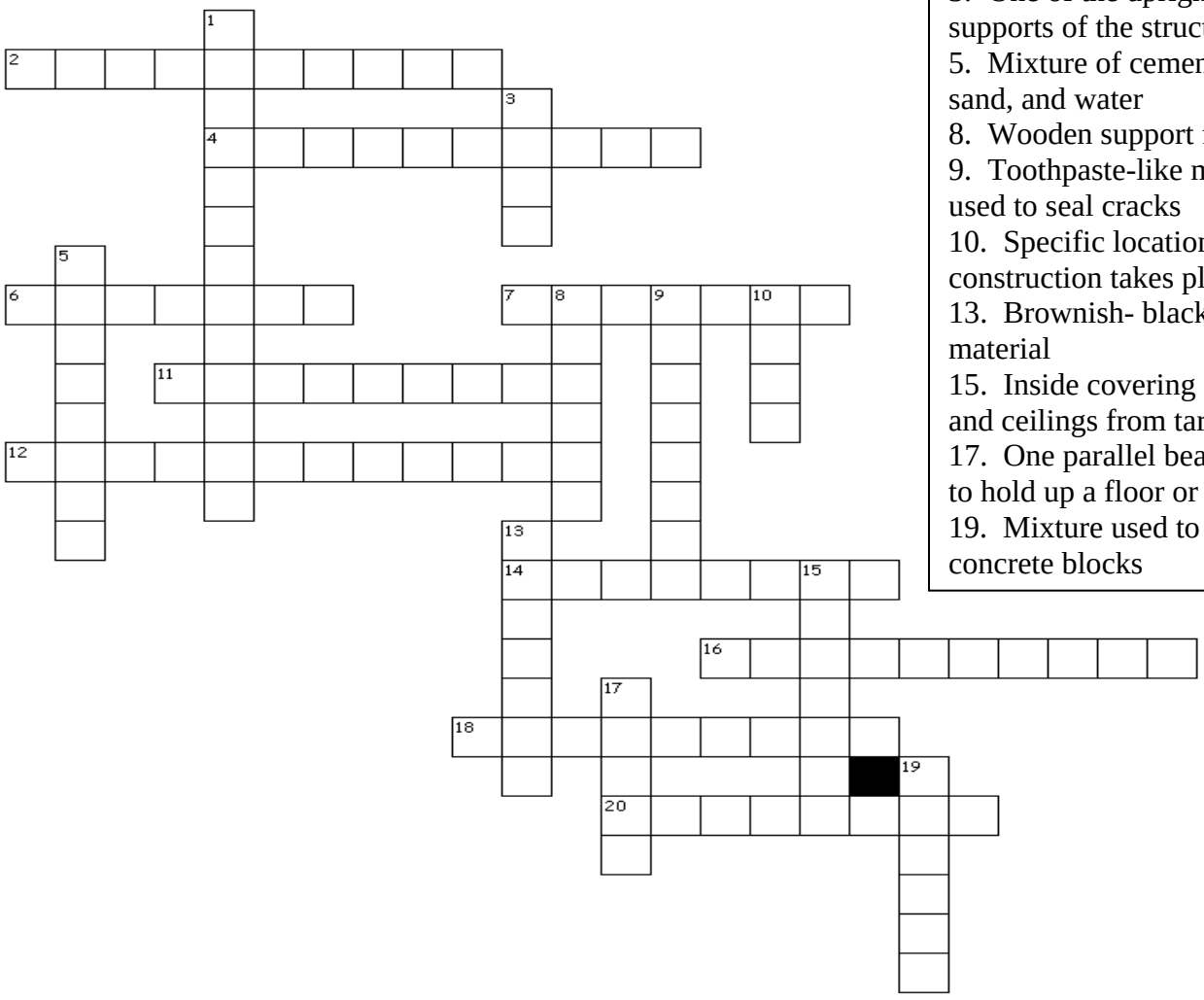
Directions: 1. Define the key terms listed below on a separate sheet of paper. 2. Create a complete sentence for each key term to show your mastery of the word.

Key Terms:

1. Lumber
2. Landscaping
3. Sole plate
4. Ceiling
5. Ceiling joist
6. Buttress dam
7. Fascia
8. Floor joist
9. Headers
10. Commercial buildings
11. Industrial buildings
12. Residential buildings

CONSTRUCTION
Name _____

Construction Cross Word Puzzle



DOWN

1. Parts of houses that are built in factories
3. One of the upright wall supports of the structure
5. Mixture of cement, gravel, sand, and water
8. Wooden support for a roof
9. Toothpaste-like material used to seal cracks
10. Specific location where construction takes place
13. Brownish- black, flexible material
15. Inside covering of wall and ceilings from tar or pitch
17. One parallel beams used to hold up a floor or ceiling
19. Mixture used to fasten concrete blocks

ACROSS

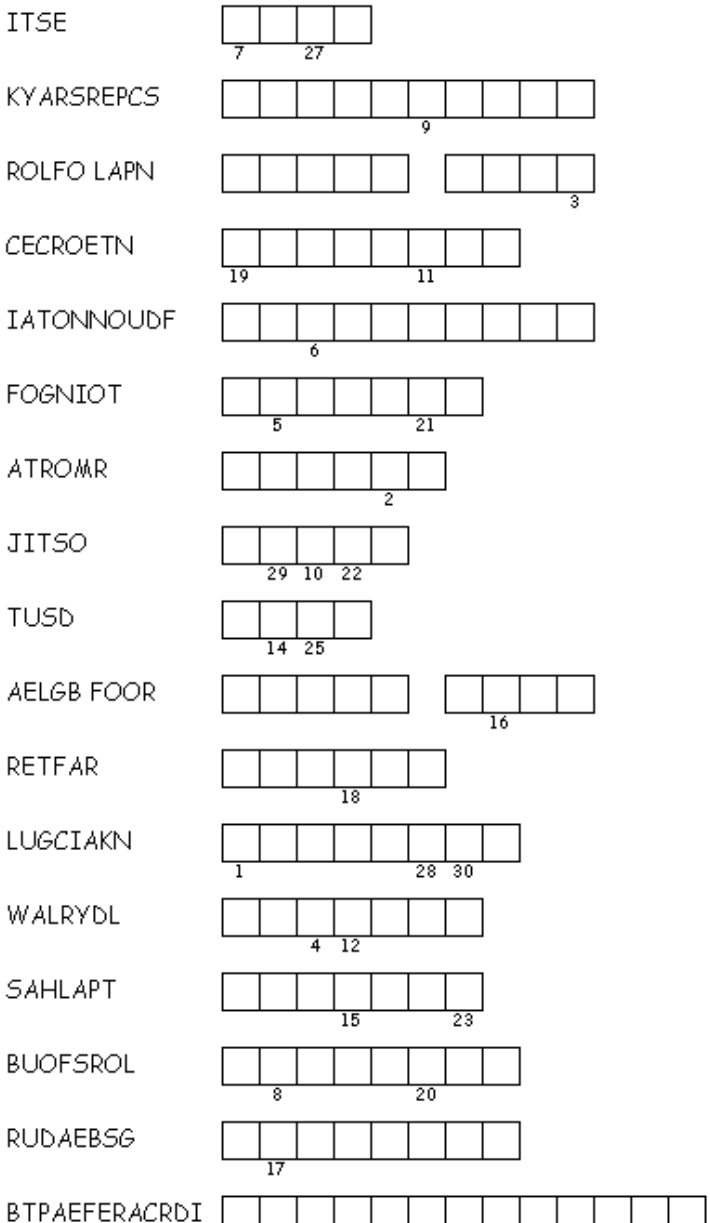
2. Brittle fibers of glass used to make items such as insulation, textiles, and structures
4. Bottom support of a structure that rests on the ground
6. Bottom part of a foundation made of hardened concrete
7. Concrete parts that have been made ahead of time
11. Roof with two sloping sides that meet at the ridge and form a triangular shape at either end
12. Rounded structure made of many small pyramid shaped frames
14. Soil or rock that forms the first layer of a road
16. Tall building with a frame made of steel
18. Sketches that show the size and location of rooms
20. First layer of flooring

CONSTRUCTION

Name _____

Construction Double Puzzle

Directions: Unscramble each of the clue words.
Copy the letters in the numbered cells to other cells with the same number.



CONSTRUCTION

Name _____

Learning Objective: Upon completion of this activity, the student will become familiar with planning construction.

Planning Construction

Directions: Match each item in the left-hand column with the correct description from the right-hand column. Write the letter of the correct description in the space provided. Some descriptions will not be used and no description will be used more than once.

____ 1. Topography	A. Tell what type of structures can be built in a specific part of a community
____ 2. Specifications	B. Community's power to levy taxes and set construction regulations
____ 3. Site plan	C. Law that states the government has the right to take private property for public use
____ 4. Elevations	N. Drawings that show the finished appearance of the outside of the structure
____ 5. Floor plan	O. All of the service systems in a building
____ 6. Survey	P. Outlines factors to be considered when choosing a building site
____ 7. Zoning laws	Q. Written details about all materials to be used, standard to be met, and regulations to be followed
____ 8. Utilities	R. Shows where structure will be located on lot
____ 9. Power of eminent domain	S. Surface features such as hills, gullies, and soil type
	T. Drawing that shows the location of rooms, walls, windows, doors, etc.
	U. Drawing that shows the exact size and shape of the piece of property

Directions: On the line beside each statement, write **TRUE** if the statement is correct or **FALSE** if it's incorrect.

_____ 10. The design of a structure is influenced by the nature of the site.
_____ 11. Telephone service is one example of a utility.
_____ 12. Building codes specify the maximum height a building can be.
_____ 13. The measurements given on scale drawings are given in the same scale as the drawing, not the actual size.
_____ 14. Contracting firms use specifications when calculating costs.
_____ 15. Cities often employ architects who are responsible for recommending areas for future community development.

CONSTRUCTION

Name _____

Learning Objective: Upon completion of this activity, students will be able to define certain structural engineering terminology.

Bridge Definitions

Directions: 1. Define the key terms listed below on a separate sheet of paper. 2. Create a complete sentence for each key term to show your mastery of the word.

Key Terms:

1. Truss
2. Tension
3. Suspension Bridge
4. Stay
5. Span
6. Cantilever Bridge
7. Cable-Stayed Bridge
8. Beam Bridge
9. Arch Bridge
10. Viaduct
11. Resonance
12. Composite

CONSTRUCTION
Name _____

Learning Objective: Upon completion of this activity, the student will be exposed to some careers related to structures.

Careers in Structures

Directions: Choose one of the structure jobs listed below. Then, list the things that you think you would enjoy about working in that job. After writing down all of the things you would like, make a list of the things that you think you would dislike about the job. On a separate sheet of paper, share your list with the class in a brief report and turn it in to your instructor.

Interior Designer And Decorator

Growing downtown firm with wide ranging interiors practice seeks interior designer with project experience and solid computer assisted design background. Artistic talents and attention to detail required. Knowledge of colors and textures important. Contact Joey at (912) 272-6854.

CARPENTER

Full-Time needed immediately. Commercial construction company offers year-round work. Drywall finishing a must. Experienced only need apply. Benefits. Call (312) 656-9353 for details.

CONSTRUCTION ELECTRICIAN

Commercial construction company needs trained electrician to install electrical systems in office buildings. Must ensure that work conforms to state and local building codes. Contact American Construction at (312) 466-0902 for additional

CIVIL ENGINEERING TECHNICIAN

Engineering firm has entry-level position for a technician with a strong working knowledge of CAD. Associate's Degree with emphasis in civil, highway, or environmental plan preparations required. Call (625) 529-8741.

Architects

Immediate opening for registered architect to manage medium-sized retail and commercial project from initial planning through construction phase. Bachelor's degree required with CAD knowledge preferred. Send resume: Stephen Carls, Cedar Architectural, Inc., 1567 Merriman Road, Atlanta, GA 30030.

SURVEY TECHNICIAN

Entry-level position for technician to work on surveying crew. Dependable individual with strong work ethic needed. Experience helpful but not required. Call Mike at (227) 425-8965.

CONSTRUCTION

Name _____

Learning Objective: Upon Completion of this activity, the student will be exposed to careers in the field of construction.

Occupational Outlook Into Construction

Directions: Using your WEB browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm). If this address doesn't work, use a search engine to locate the current address. Use the handbook to research information on occupations that involve construction. Select one career and summarize in a two-page report what you discovered. Include the following:

1. Nature of work
2. Working conditions
3. Employment
4. Training and Qualifications
5. Job outlook
6. Earnings
7. Related Occupations

CONSTRUCTION

Name _____

Learning Objective: Upon completion of this activity, the student will think about the past, present, and future of women in construction.

Women in Construction

Directions: Read the following information about women in construction and answer the following essay questions on your own paper.

At the turn of the century, less than one in five female workers worked in an office. That changed during the 1920s. By 1930, 44 percent of employed women worked at "white collar" jobs-a total of 736,000. After a while, the jobs of typist, stenographer, and cashier became known as "woman's work." Since then, it has been difficult for women to get jobs in other areas.

In the past, construction was a man's world. Today, however, more and more women are entering the field. Now, only 10 percent of the construction work force are women, but the U. S. Census Bureau predicts that 42 percent of people entering the field in the 1990s will be women.

The National Association of Women in Construction helps women gain employment in the field. The Association sponsors training so that students learn the right skills. They study blueprint reading, math, and safety. They also receive hands-on training in building trades.

The construction industry will need 200,000 new workers each year. The NAWIC members believe that if they can reach one out of every ten graduating students, they will secure the women workers they need. Because salaries in the construction industry are higher than in other industries, NAWIC believes that many women will be interest4ed in the jobs available.

1. Why do you think men have done construction jobs traditionally?

2. Why do you think women are becoming more interested in construction jobs?

3. In the past, many employers assumed that women could be paid less because they worked only for luxuries or until they got married. What has changed so that this assumption is no longer valid?

CONSTRUCTION

Name _____

Learning Objective: Upon completion of this activity, the student will have experience answering a job advertisement.

Answering a Job Advertisement

Directions: Read the paragraph below about answering a job advertisement and write at least two pages if handwritten, or one page typed. It must be single-spaced with twelve point Times New Roman font if typed.

Perhaps many times during your work life you will look for a job by answering an advertisement. Some ads ask that you stop by and fill out an application. Others want you to write to them, telling them about yourself and your qualifications. Your letter then becomes an advertisement for yourself and your abilities.

For this activity, you will write a letter answering a job advertisement. You may do it one of two ways. You may put all the information requested in the letter itself, or you may write a short introductory letter and put your work history in a resume. (A resume is a formal listing of facts about your education and jobs you have had.)

Remember, you are "selling" your abilities to an employer. Keep the following in mind:

- Put yourself in the employer's place. What would you be interested in if you had to hire someone for the same job?
- What is the benefit to the employer who hires you? What can you do that makes you a good choice?
- The employer who reads this letter will not have a chance to meet you first. He or she will not know in advance what a terrific person you are. Your letter will be your representative. What will it say about you to the reader? Of course, it will be filled with facts, but how will it look? Will it be neat or sloppy? Will it be filled with mistakes? Will it be friendly and confident or cold and uncertain? Here's the advertisement you must answer:

Help Wanted: Construction Workers for Space Station

The National Aeronautics and Space Administration is seeking construction and production workers of all kinds to work on board its planned space station. If you have some experience in manufacturing or construction, either in school or on the job, we'd like to talk to you.

Workers will live on board the space station for one year. Salaries are comparable to those on earth, plus room and board. The space station operates around the clock, and all shifts are available.

Please write, giving your work background and education. Tell us what job you'd like and why you'd be interested in working on the station. Reply to: Captain J. L. Picarde, NASA recruitment, 1007 Galaxy Dr., Your Town.

CONSTRUCTION

Name _____

Learning Objective: Upon completion of this activity, the student will be able to discuss and describe the construction of structures process.

Constructing Structures

Directions: Use the Internet, library, textbooks, or whatever research medium is available to you to answer the following essay questions. Use a separate sheet of paper to record your answers. Remember to use complete sentences and use correct grammar and spelling.

1. Define construction.
2. List and describe two types of construction.
3. Describe the major types of buildings that are constructed.
4. Describe the structures built by heavy engineering.
5. List and describe the steps involved in constructing a structure.
6. Describe how a site is prepared for a construction project.
7. List and describe the types the types of foundations.
8. Describe the major types of walls and roofs used in buildings.
9. Explain the types of utility and mechanical systems, and how to install them.
10. Describe the types of heavy engineering structures.

CONSTRUCTION
Name _____

Learning Objective: Upon completion of this activity, students will think about the challenges involved in building bridges.

STRUCTURAL ENGINEERING - BRIDGES

Directions: 1. Use complete sentences to answer each question. 2. Use your own notebook paper.

1. Thousands of cars drive over bridges each day. What are some techniques used to enable a bridge to withstand this level of wear and tear? What keeps the bridges from falling down?

2. In October 1989, a strong earthquake in the San Francisco Bay Area caused tremendous structural damage to many bridges. What are some ways that such bridge damage might be avoided in the future?

3. What is the longest bridge in your area? Why was it built? What factors determined the materials used to design and build it? Did the builders face any special challenges?

4. Does a career as a bridge builder or engineer sound interesting to you? Why or why not? What challenges do you think would be particularly frustrating?

5. The U.S. government requires states to inspect and evaluate all bridges at least once every two years. What are some ways that technology can be used to make the inspection of bridges more efficient and effective?

6. In addition to being functional, bridges frequently become attractive landmarks for a town or region. Which bridges do you think are most visually appealing? Why?

CONSTRUCTION
Name _____

Learning Objective: Upon completion of this activity, students will think about the challenges involved in building bridges.

Bridge Research

Directions: 1. Use the questions below to guide your research on the bridge you selected. 2. Use a separate sheet of paper to record your answers.

1. When and where was the bridge built?

2. What type of bridge is it (arch, beam, suspension, cable–stayed, cantilever, movable)?

3. What were some special challenges that the architects and engineers of this bridge faced? How did they overcome those challenges?

4. How long did it take to complete construction of the bridge?

5. Approximately how many cars use this bridge each week (or year)?

6. What kinds of maintenance or check-ups are done on the bridge? How often? What could happen without the maintenance?

7. Did you find any interesting stories about this bridge? Any fun or cool facts?

CONSTRUCTION

Name _____

Learning Objective: Upon completion of this activity, student will think about the history of skyscrapers.

Skyscrapers

Directions: Use the Internet, library, textbooks, or whatever research medium is available to you to answer the following questions. Use your own paper.

During the 1920s in the United States, new technologies revolutionized both manufacturing and construction. As business boomed, companies needed newer and better offices. A growing urban population needed more houses and apartment buildings. In 1910, European travelers to New York City had been amazed by 20- story skyscrapers. By 1930, skyscrapers reached 60 stories. On May 1, 1931, the Empire State Building became the tallest building in the world at 102 stories!

1. One of Thomas Edison's inventions, used for elevators, made skyscrapers possible. What was that invention?

2. The first skyscraper was built in 1884-85. Who designed it? Where was it built? How many stories did it have? What material was used in its frame?

3. Find the heights of these buildings in feet (from sidewalk to roof):

- Chrysler Building, New York City
- Standard Oil Building, Chicago
- Sears Tower, Chicago

CONSTRUCTION
NAME _____

Learning Objective: Upon completion of this activity, the student will have experience writing a business letter.

Construction: Final Letter

Directions: You have completed the construction unit. You will now write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name)

First paragraph- Explain what you enjoyed or did not enjoy about construction.

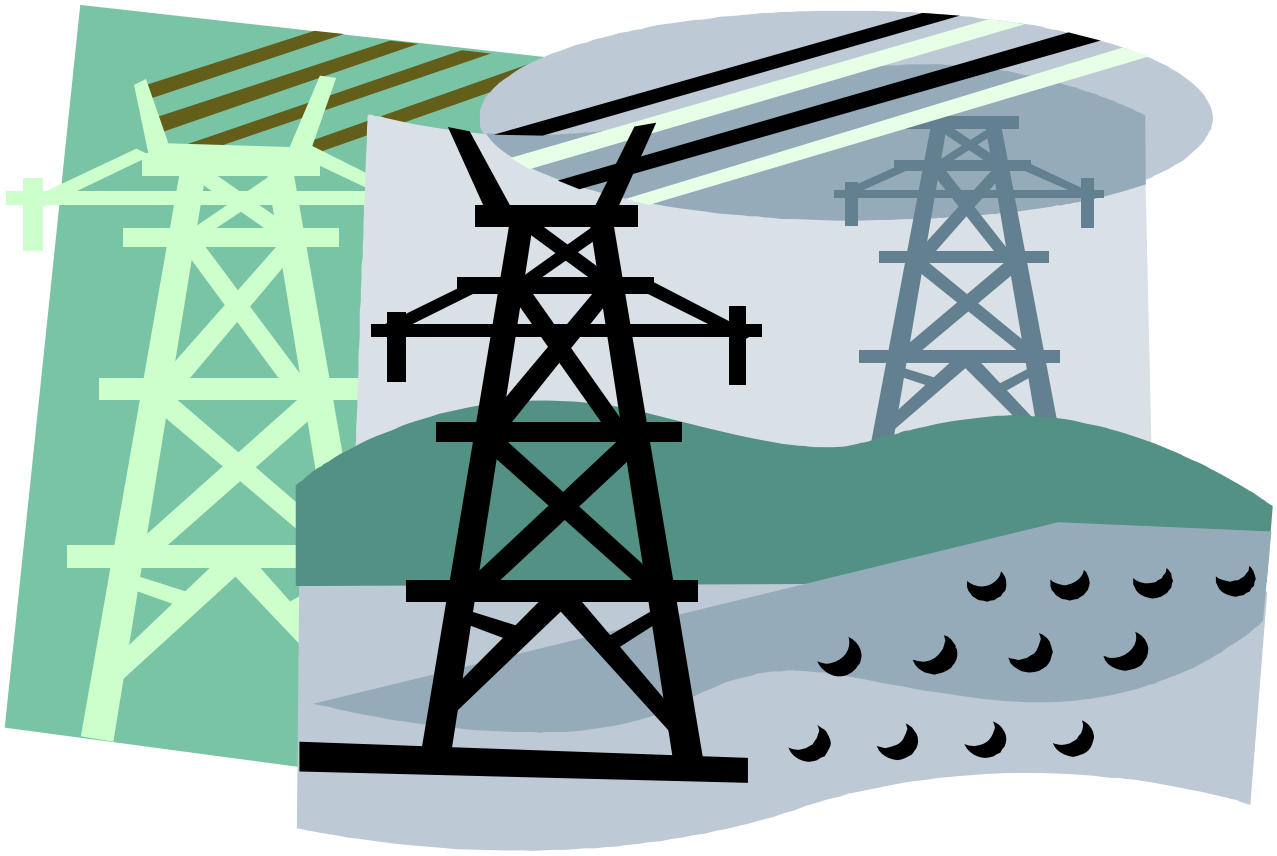
Second paragraph- Explain three important things that you learned.

Third paragraph- Discuss what more you would have liked to learn.

Sincerely,

Your Signature
Type your name under your signature.

ENERGY TECHNOLOGY



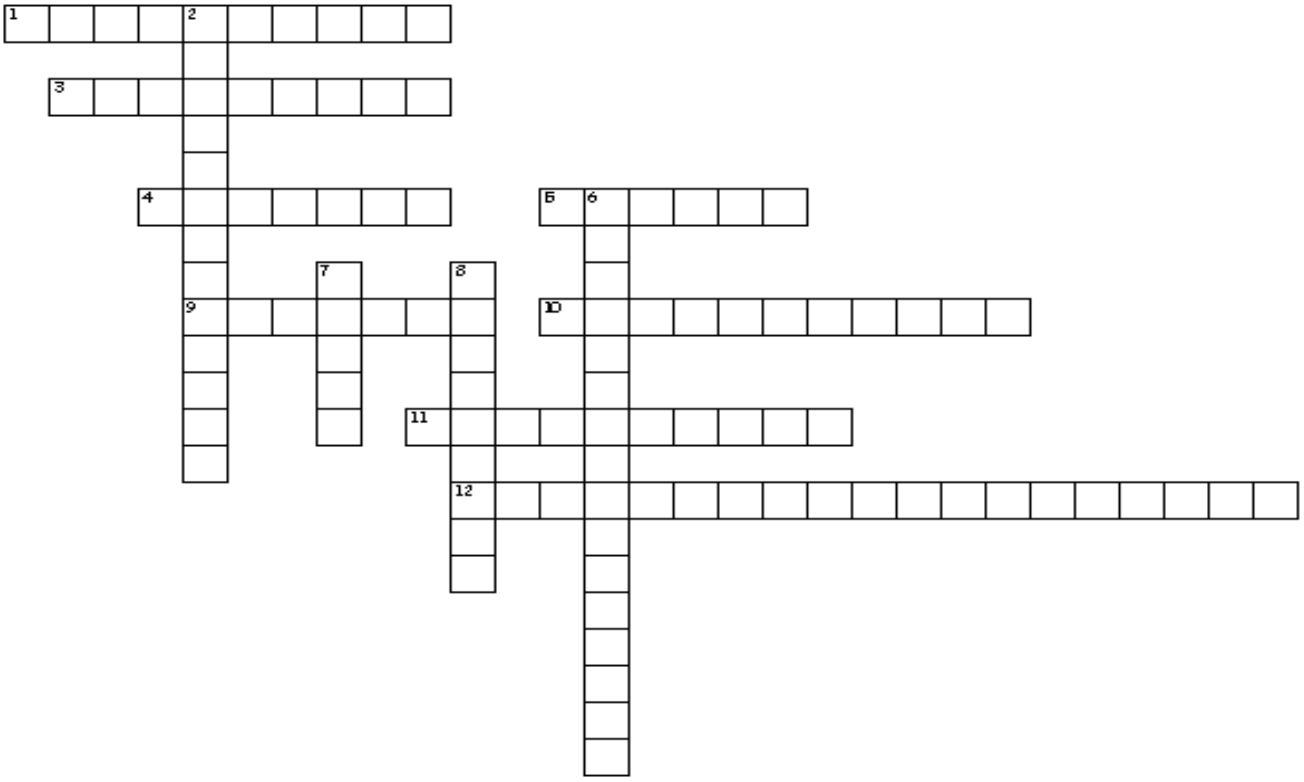
ENERGY TECHNOLOGY

Upon completion of the activities in this unit the student will:

- have a better understanding and appreciation of energy technology.
- gain an insight of career opportunities in the field of energy technology by researching various topics.
- be able to demonstrate writing competency in the field of energy technology.
- possess increased knowledge concerning how energy technology is used to produce products and services that meet society's needs.

ENERGY TECHNOLOGY
Name _____

DEVELOPING YOUR VOCABULARY: KEY WORDS



Across

1. Energy in the ground caused by radioactive decay of certain elements.
3. A large number of windmills located in an area that gets lots of wind.
4. To reuse all or parts of substances such as metal and glass.
5. Ability to do work.
9. Amount of energy required raising the temperature of one gram of water by one degree Celsius.
10. Form of energy that comes from invisible electronic particles through an electrical conducer.
11. Device that converts sunlight into electrical energy.
12. The management and efficient use of all energy sources.

Down

2. Electricity generated by turbines propelled by flowing water.
6. When atomic particles hit each other and split apart.
7. Measures the work done when energy is used.
8. Any liquid that comes from the ground and can be burn.

ENERGY TECHNOLOGY
Name _____

Learning Objective: Upon completion of this activity, students will have a better understanding where energy comes from.

Developing Your Vocabulary: Enrichment

Directions: Find the following words in the puzzle below.

Q W R H B N U G L T Z Y O W I
P Z E N E G G D Q F I Q G M I
Y I E M O D N B M N P H B F J
Q O S J G V H G B B A T J D D
P L R A D I O A C T I V E X T
F H W N O N R E N E W A B L E
T C O A L R E S E R V E L I Y
U R P T W Z E W G Y N A O R I
C H O Z E C U L P J U K O E Y
W W H J S B S P T S N E T J P
C Z D G L L E C R A L O S K D
L J H C Y B E D H C I R E C P
G X O Q I N F U Y L M C B B N
C K E X G C F C F W I V J J P
J Z A H P R E Z M Z T Y H L V
O G L G Z R C Z O G E F Z M V
V H O X C M T J U R D D G O H
U F F S N D H D L B T O B V Y
R W C B U O K P D W N H K K C
B L C S O K F S N U Q Y Q F F
C U Z M V F F S T C A Z V M F
R D H T I R R B I K P B G X P
Y I S Y Q F M Y C R W O I D D
B D X Q K R X X F R R N S M Q
S G U J Y N F L T Y M K A C N
W D S E Y X N U E E V I G H A
P F D G U E A S G Q N V K U M
Y E L R A K T D U P P I E A W
B R Y L Z H Z R H R F E M H X
R P F U J N R V E S L Q P C X

Coal Reserve
Fuels
Greenhouse effect
Horse Power
Photo Voltaic
Radio Active
Recycle
Renewable
Nonrenewable
Unlimited
Solar Cell

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will be able to define and apply mechanical energy terminology.

Energy Terminology

Words to know:

Accelerated Motion	British Thermal Unit (BTU)	Conduction
Acceleration	Degree-Day	Convection
Efficiency	Horsepower	Radiation
Speed	Velocity	Torque

Directions: Complete the following.

True/False: If a statement is true, write *True* in the blank. If a statement is False, write *False* in the blank.

____1. Speed is the ratio of the distance traveled by an object to the time it takes to travel that distance

____2. The mathematical relationship of force is expressed as mass times acceleration.

____3. Pressure is a measure of a force applied to a given area.

Short essay: Write a brief answer to the following questions.

4. Using the definitions of conduction, convection, and radiation, identify examples of residential applications involving each method of heat transfer

.

5. Give an example in which records of heating degree-days are used in relationship to energy conservation.

ENERGY TECHNOLOGY
Name _____

Learning Objective: Upon completion of this activity students will have a better understanding of how societies demand and consume energy.

ENERGY DEMAND AND CONSUMPTION

Directions: Define these terms using complete sentences.

Words to know: Commercial sector
Energy Demand
Energy Sector
Energy Consumption
Transportation Sector
Embargo
Cogenerations
Industrial Sector

Directions: Complete the following.

1. True/False: If a statement is true, write *True* in the blank. If a statement is false, write *False* in the blank

____a. ctrical demand is expected to increase at a faster rate than can be supplied by utility companies.

____b. Energy demand is decreasing at a rate of approximately 2 to 4 percent annually.

____c. Electric utilities are both major producers and consumers of energy.

2. Short essay: Write a brief answer to each of the following questions

a. List ways in which energy demand could be reduced in the industrial sector.

_____
_____
_____
_____

b. Why is the demand for electric energy growing so fast? What are some methods that society could incorporate that would reduce electrical energy demand?

_____
_____
_____
_____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will have a better understanding of the types of energy and energy resources.

FORMS OF ENERGY

Directions: Complete the following exercises

_____ is everywhere we look. It is in the fires that burn coal and wood. Energy is in the_____, wind, and moving water. In fact, we could not exist without the aid of energy.

True/False: If a statement is true, write *True* in the blank. If a statement is false, write *False* in the blank

.

_____ 1. Radiant energy is in the form of electromagnetic waves.

_____ 2.. Typical sources of chemical energy are the fuels we use to power our technological machines.

_____ 3. Thermal energy is another name for heat energy.

_____ 4. Thermal energy can be seen directly.

_____ 5. Electrical energy is associated with electrons moving along a conductor.

_____ 6. Electrical energy is not used as a basic source for other forms of energy.

_____ 7. Nuclear energy is associated with internal bonds of atoms. When atoms are split, they release vast quantities of energy. This process is called fusion.

Short Answer: On the lines provided, write a brief answer to each of the following questions

8. Define energy

_____
_____
_____

9. Energy is a basic input to all technological systems. All energy comes in one of the three basic types of resources. List and describe each resource.

_____
_____
_____
_____
_____
_____
_____

10. Hundreds of examples of energy can be grouped into six major forms. List and describe each form of energy below.

_____
_____
_____
_____

ENERGY TECHNOLOGY
Name _____

Learning Objective: Upon completion of this activity, the student will be able to distinguish between the different types of energy sources.

Classify Today's Energy Sources

Directions. For each of the following types of energy, determine whether it is an example of a Renewable, Nonrenewable or an Unlimited Source of Energy, and write the correct letter in the space provided.

R = Renewable Source of Energy
N = Nonrenewable Source of Energy
U = Unlimited Source of Energy

_____ 1. Coal

_____ 2. Wind

_____ 3. Flowing water

_____ 4. Food

_____ 5. Natural gas

_____ 6. Animals

_____ 7. Solar energy

_____ 8. Wood

_____ 9. Oil

_____ 10. Geothermal

_____ 11. Alcohol

_____ 12. Uranium

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will have a better understanding of energy supplies and the sources available.

Energy Supplies and Resources

Directions: Write a brief answer to each of the following questions.

1. In your opinion, what would be the best way to reduce the energy needs of society? Give examples to support them.

_____

_____

_____

_____

2. What is the importance of studying doubling times? How does the concept of doubling-time relate to the study of energy?

_____

_____

_____

_____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity, students will be able to investigate the history, abundance, and types of solar energy.

History of Solar Energy

Define:

Absorptivity	Indirect solar energy	Solar cells
Active solar systems	Insolation	Solar constant
Ambient	Passive solar systems	solar orientation
Direct solar energy		

Directions: Fill in the blanks with a word or phrase that best completes the sentence.

1. _____ energy is the radiant energy transmitted to the earth from the _____. It has provided, either _____ or indirectly, almost all of the sources of energy on earth since the planet's formation. Analysis shows that most forms of energy used today originated from the sun except for _____ and _____ _____ energy.

True/False: If a statement is true, write *True* in the blank. If a statement is false, write *False* in the blank.

_____ 2. Solar energy is the radiant energy transmitted to the earth from the sun.
_____ 3. Solar energy cannot be characterized as either direct or indirect.
_____ 4. Insolation is solar radiation received per unit area for a given unit of time on the surface of the earth.
_____ 5. Solar ponds are large bodies of water that trap heat at the bottom.

Short essay:

6. Identify three disadvantages and three advantages of using active solar space heating systems.

_____
_____
_____
_____
_____
_____
_____
_____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will be able to
Understand how energy is fundamental to all technological activities

Solar Energy

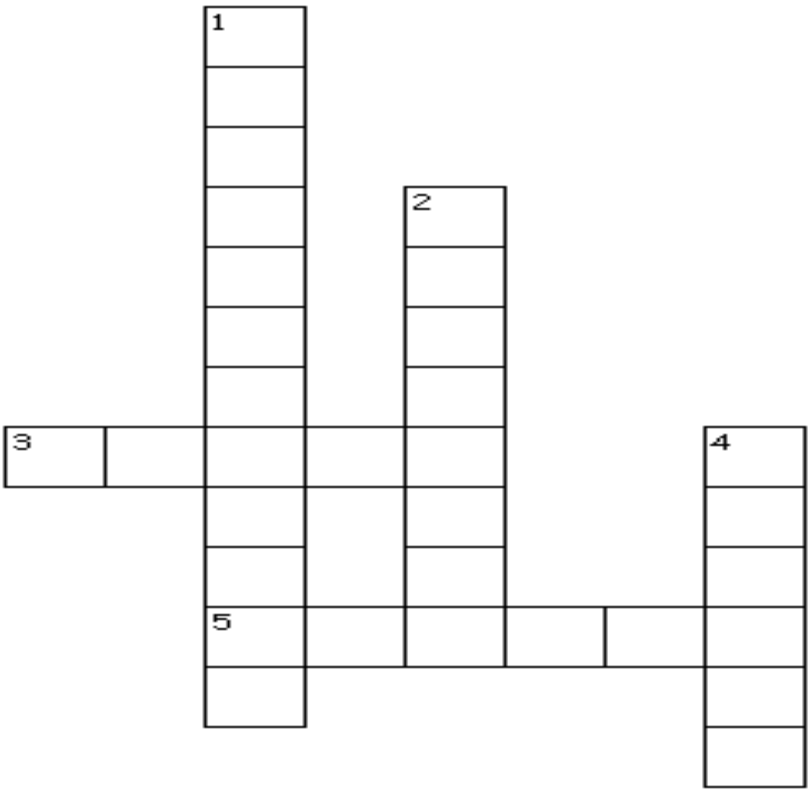
Directions: On the work sheet provided by your instructor, complete these paragraphs with appropriate words to complete the idea. Write using complete sentences and use appropriate punctuation when necessary. When you have finished, read over your work to make sure your sentences make sense.

a. Safety is an important factor when working with solar energy. It is important to _____. It is also necessary to _____. Another precaution is to _____. The sun is an energy source whose power must be harnessed.

b. Words to know: solar converters active collectors photons
photovoltaic direct gain indirect gain

c. Research in the use of solar energy is important because _____. However, this research has been limited by _____. Solar power is already being used in countries such as _____. In fact, even in America, solar power is being used in _____ to _____.

ENERGY



Across

3. Converters Uses constant energy source of the sun.
5. Collector Use a pump to circulate water

Down

1. Small cell that is used to power a calculator
2. Gain Series of collectors
4.. Gain Allows radiant energy to enter the home through windows

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity the students will be able to analyze various cost factors involved in implementing solar energy technology

Solar Heating Systems

Directions: Fill in the blanks with a word or phrase that completes the sentence.

1. The major uses of energy in the residential and commercial sectors are _____, _____, and _____. The remaining energy is used in applications, such as lighting and appliances.

Short essay: Write a brief answer to the following questions.

2. How can solar energy be used in various energy-using sectors of society? What technologies must be improved to accomplish this task? What role can education play in accomplishing this task?

_____

_____

_____

_____

_____

_____

_____

_____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will have a better understanding how nuclear energy plays an important part as a source of energy.

Nuclear Energy Resource

Words to know:	Alpha Decay	Beta Particle	Curie
	Decommissioned	Fission	Fusion
	Gamma Ray	Half-life	Meltdown
	Natural radiation	Nuclear fuel cycle	Radioactive decay
	Radioactivity		

Directions: Complete this paragraph with words to complete the idea.

1. _____ is associated with the internal bonds of atoms. When atoms are split, they release vast quantities of energy. This process is called _____. Likewise, combining two atoms into a new, larger atom releases large amounts of energy. This process is called _____.

2. Multiple Choice: Choose the best answer and write the corresponding letter in the blank.

_____ Heat energy is also referred to as:

a. Thermal energy
b. Radiant energy
c. Chemical energy
d. Nuclear energy

3. List and give examples of the three of the six forms of energy resources.

_____
_____
_____
_____
_____
_____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will be able to trace the historical development of nuclear energy.

Nuclear Energy Timeline

Direction: On the bottom half of this sheet, students are to draw a time line for the development of nuclear energy. Be sure to include on your time line the following information:

a. Trends in the development of nuclear power,
b. Discovery of barium,
c. Problems in splitting uranium nuclei,
d. Collaboration of scientists and technologies,
e. The first nuclear chain reaction,
f.. Postwar developments in nuclear power,
g. The Atomic Energy Act.

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will have a better understanding of wind energy as fundamental to all technological systems.

Wind Energy Conversion

Directions: Complete the following exercises.

1. True/ False: If a statement is true, write *True* in the blank. If a statement is false, write *False* in the blank

____1. Humans cannot create energy but can convert it to meet their needs.
____2. Active solar collectors collect, store, and distribute the heat generated by the device.

2. Short Answer: Write a brief answer to each of the following questions.

A.. List two early energy converters that used inexhaustible energy resources.

_____
_____

B. Describe the difference between an active and a passive solar energy conversion system.

_____
_____
_____
_____
_____
_____
_____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity students will better understanding how fluid power systems use either liquids or gases to transfer power from one location to another

Fluid Power Systems

Directions: Complete the following exercise.

Define: pneumatic hydraulic PSI

1. Fluid power systems use either _____ or _____ to transfer power from one place to another. Systems that use air as the transfer medium are called _____ systems. _____ (usually oil) are used in hydraulic systems.

2. Short Answer: Write a brief answer to the following question.

Describe the three ways hydraulic systems are used.

_____
_____
_____
_____
_____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completion of this activity student will have an understanding of a number of methods that are used to produce thermal energy to heat materials and buildings. These include burning fuels, capturing heat from the surroundings, and converting electrical energy.

PRODUCING HEAT

Directions: On a separate sheet of paper provided by your instructor, complete the paragraph with appropriate words to complete the idea. Write using complete sentences and use correct punctuation when necessary. When you are finished, read over your work to make sure your sentences make sense.

A. The fuel is burned in a firebox to generate thermal energy. _____ current pass through the cells of the heat exchanger and raise its temperature. This _____ _____ is transferred in the heat distribution chamber to a _____ (water or air), which is then passed over or through the heat exchanger.

b. Define: Conduction Convection Radiation

True/False: If a statement is true, write *True* in the blank. If a statement is *False*, write false in the blank.

_____1. Typical fuel converters include fossil fuel furnaces, wood burning stoves, and fireplaces.

_____ 2. The atmosphere has heat available no matter how cold the day seems.

Short Answer: 3. List and give examples of the three types of energy resources.

A._____

B_____

C._____

ENERGY TECHNOLOGY

Name _____

Learning Objective: Upon completing this activity the student will be able to write a news article related to energy technology.

Energy News Article

Directions: You are to write a news article, 1 – 2 pages in length, on energy technology. Use computer software such as Microsoft Word 2000, PageMaker, etc. Be sure to include some form of graphics or charts to emphasize your report. Your report should be in newspaper format.

ENERGY TECHNOLOGY

NAME _____

Learning Objective: Upon completing this activity the student will be able to complete select sections of a job application.

Job Application

Directions: Complete the select sections of the job application as though you were qualified for the position of one of the careers listed below. Be resourceful. Use your imagination

Position: Energy Technologist (Engineer, Environmentalist, or Chemist)

Education: _____

_____

_____

_____

Experience: _____

_____

_____

_____

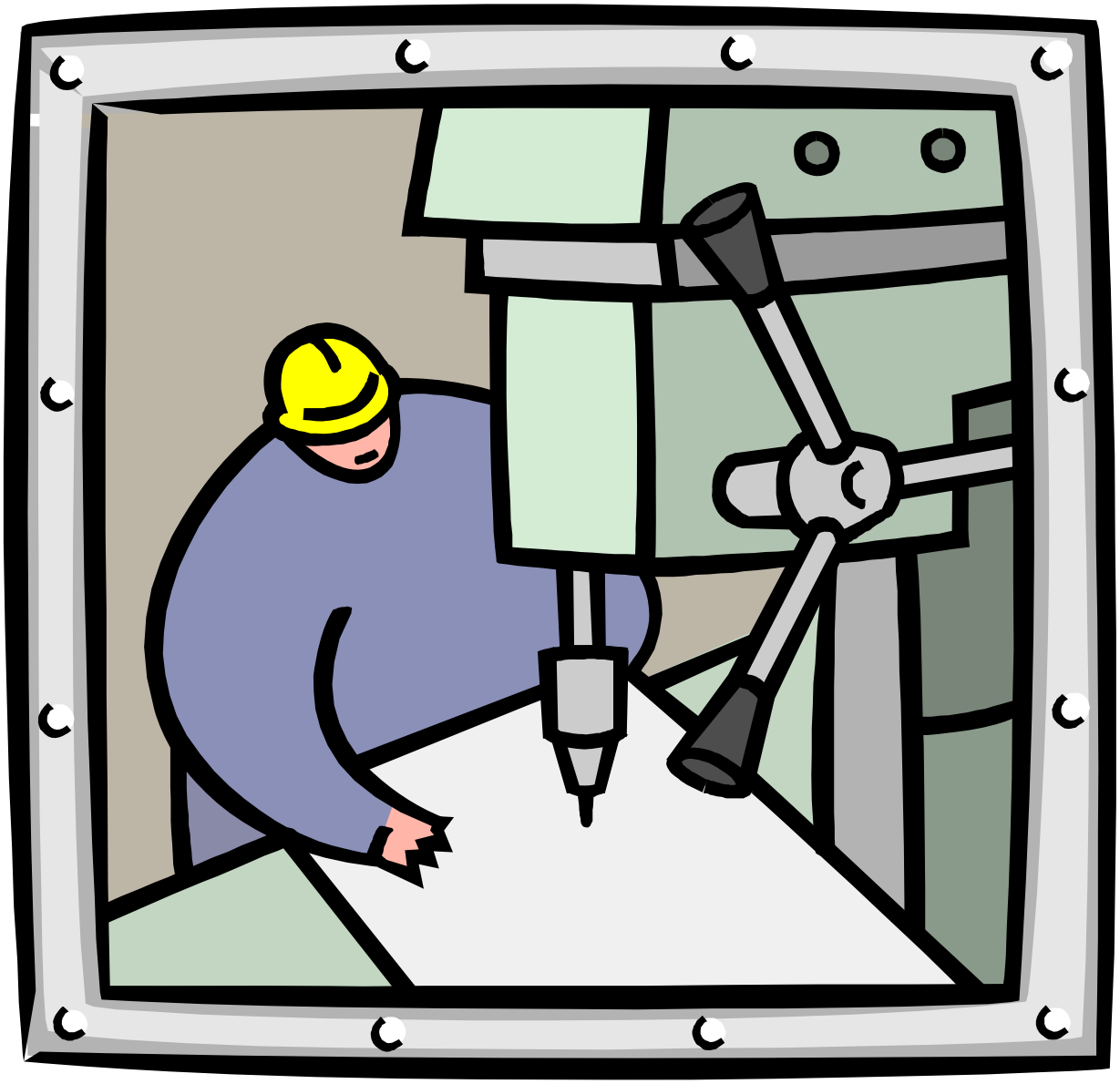
Personal Interest: _____

_____

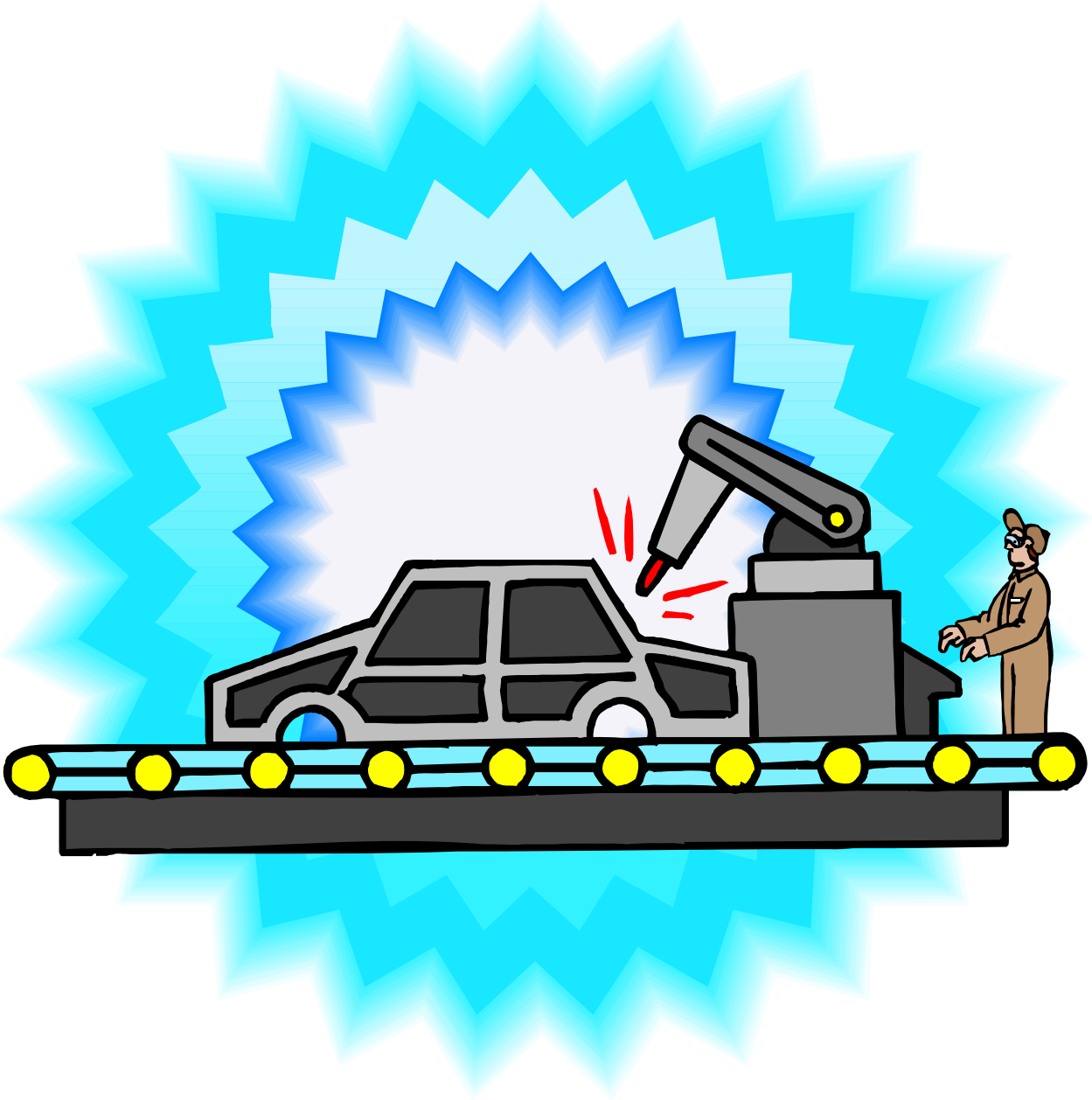
_____

_____

Manufacturing Systems



CNC SYSTEMS



MANUFACTURING TECHNOLOGY

CNC SYSTEMS

Upon completion of the activities in this unit, students will:

- be more aware of the safety factors concerning CNC systems.
- gain a greater knowledge of the history of CNC systems in modern industry.
- have increased awareness of careers in the manufacturing and CNC programming fields.
- possess increased ability to research topics using the Internet and printed sources.

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: After completing this activity, the student will have increased knowledge of terms related to CNC systems.

CNC VOCABULARY

Directions: Find the correct definition for each term given and on your own paper write the term and its definition in a complete sentence. Use correct capitalization and punctuation.

Terms:

1. Manufacturing	2. Automation	3. CNC	4. Stock
5. Program	6. Software	7. M Codes	8. Lathe
9. Numerical Control	10. Renderings	11. Feed rate	12. Pocketing
13. Cutter Compensation	14. Mock-up	15. Prototype	16. Scale
17. Design Engineering	18. Circular Interpolation		
19. Datum Dimensioning	20. Cartesian Coordinate System		

Definitions:

a. a term used to describe the process of creating and making products
b. displays the X and Z coordinates in a drawing so the CNC programmer doesn't need to calculate them
c. a manufacturing system in which most or all of the machines and processes run with little or no human control
d. a set of coded instructions written to control the operation of the computer
e. an acronym for Computer Numerical Control
f. refers to the speed at which the tool moves during cutting
g. material used for creating parts
h. the size of the drawn part compared to the size of the actual part
i. an organized sequence of events that directs the activity of a machine tool
j. sketches that show the finished product with all details included, such as color, purchased components, and hardware
k. a type of geometry that states any point can be found and described by its distance from two lines (X and Y axes)
l. a fully functional full-sized model of the product
m. a specialized form of automation: automatic machine tools are programmed to perform in ordered sequence of events
n. the process of designing products
o. miscellaneous codes used for activities such as tool changing
p. a scale model of a finished product
q. a machine that uses a cutting tool to remove material from a work piece to create a part
r. refers to removing material from a specific area to a given depth
s. moves the cutting tool along an arc from the starting point in one line of programming to an end point specified in the next line
t. offset written into a program to compensate for tool diameter

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: After completing this activity, the student will gain proficiency in synthesizing information and rewording phrases.

THE HISTORY OF CNC SYSTEMS

Directions: Sentence-combining is combining short, choppy sentences into longer, more interesting sentences. When combining sentences, you may add any new words needed to make a new sentence. The meaning, however, must be maintained. Notice there are two different ways to combine each cluster. On a separate sheet of paper, rewrite each combined sentence checking spelling, punctuation and capitalization.

4. N/C stands for Numerical Control. CNC is an acronym for Computer Numerical Control. These are manufacturing systems. They control machines such as milling machines and lathes.

    A. _____ and milling machines are often controlled by _____ or _____ systems.
    B. The terms _____ and _____ are acronyms for Numerical Control and Computer Numerical Control respectively.

5. Numerical control was developed in the 1960's. It revolutionized manufacturing. It lowered costs of manufacturing. It improved quality and shortened lead times. Productivity was dramatically increased.

    A. In the _____, N/C systems revolutionized manufacturing by _____ _____, improving quality, _____ _____ _____.
    B. Through the development of _____ systems in the _____, the field of manufacturing was _____ in a variety of ways.

6. Numerical Control as we know it today began in 1947. John Parsons of the Parsons Corporation was the first successful pioneer. He coupled computer equipment with a jig borer. The Massachusetts Institute of Technology is credited with coining the term Numerical Control.

    A. Although the Massachusetts _____ of _____ is credited with coining the term N/C, John _____ of the Parsons Corporation developed N/C as we know it today in _____.
    B. By coupling a _____ with a jig borer, _____ Parson of the Parsons Corporation _____the N/C system as we know it today in 1947.

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: After completing this activity, the student will be familiar with job classifications.

JOB CLASSIFICATIONS IN THE MACHINIST/CNC FIELD

Directions: Listed below are four job classifications related to the manufacturing/robotics field. Using complete sentences, write a brief description of each job classification. Include the following in each description:

a. definition of the classification
b. training for each classification
c. on-the-job requirements in each classification
d. an example of a job in the classification

Semiskilled:

Skilled:

Technical:

Professional:

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: After completing this unit, the student will be more aware of safety issues concerning CNC systems.

CNC Systems Safety Exercise

Directions: Combine notes A and B into a complete sentence to form a safety rule.

EYES
- A. safety glasses
- B. cutter bits and shavings

_____
_____

EARS
- A. loud noise
- B. ear plugs

_____
_____

HANDS AND FINGERS
- A. keep clear
- B. cutter bits

_____
_____

HAIR
- A. long hair
- B. protective cap or net

_____
_____

CLOTHING
- A. loose clothing
- B. tangled

_____
_____

JEWELERY
- A. remove
- B. caught in machines

_____
_____

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: After completing this unit, the student will have greater skill at writing a job resume.

CNC Systems Resume Writing Assignment

Directions: Using your WEB browser, type in the address for Community Learning Network (www.cln.org/themes/writing_resumes.html) If this does not work, use a search engine to locate the current address. Use the resources provided to develop your personal resume. You should "pretend" you are applying for a position as a CNC programmer.

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: After completing this activity, the student will increase research and documentation skills.

CNC Research Activity

Directions: Using a variety of materials (i.e. Internet, encyclopedias, and textbooks) research and document findings on the topics listed below. Utilize this research to compile a paper (no less than 5 typed pages, double-spaced) that addresses all the topics.

Numerical Control vs. Computer Numerical Control

Manual Machining Techniques

Data Input and Storage

Coding Systems

Cartesian Coordinate System

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: Upon completion of this activity, student will be more aware or careers that utilize CNC systems.

Careers That Utilize CNC Systems

Directions: Using a variety of materials (i.e. Internet, encyclopedias, and textbooks) research and document findings on the careers listed below. Utilize this research to compile a paper (no less than 5 typed pages, double spaced) that addresses one of the careers.

CNC programmer

Machinist

Tool & Die maker

Computer programmer

Industrial engineer

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: Upon completion of this activity, the student will increase understanding of careers that utilize CNC systems.

Occupational Outlook Handbook

Directions: Using your WEB browser, type in the address for the Occupational Outlook handbook (http://stats.bls.gov/ocohome.hem). If this address does not work, use a search engine to locate the current address. Use the handbook to research information on occupations that utilize CNC systems. Select one career and summarize your findings in a two-page report. The report should include the following information:

Nature of work

Working conditions

Employment

Training and Qualifications

Job Outlook

Earnings

Related Occupations

MANUFACTURING SYSTEMS (CNC Systems)
Name _____

Learning Objective: After completing this activity, the student will have increased ability to compare and contrast information.

CNC Systems Activity

Directions: Select and complete one of the following items. Use complete sentences.

A. Write a proposal to your boss describing the extra efficiency that CNC systems could bring to your machine shop business.

B. Compare/contrast the CNC systems of today to the manually operated machining systems used from World War II thru the1970's.

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

Learning Objective: Upon completion of this activity, the student will gain proficiency in letter writing.

CNC: Final Letter

Directions: You have completed the CNC unit. You will now write a letter to your instructor explaining things you have learned and things you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's Name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name),

First paragraph – Explain why you enjoyed or did not enjoy CNC systems.

Second paragraph – Explain three important things you learned.

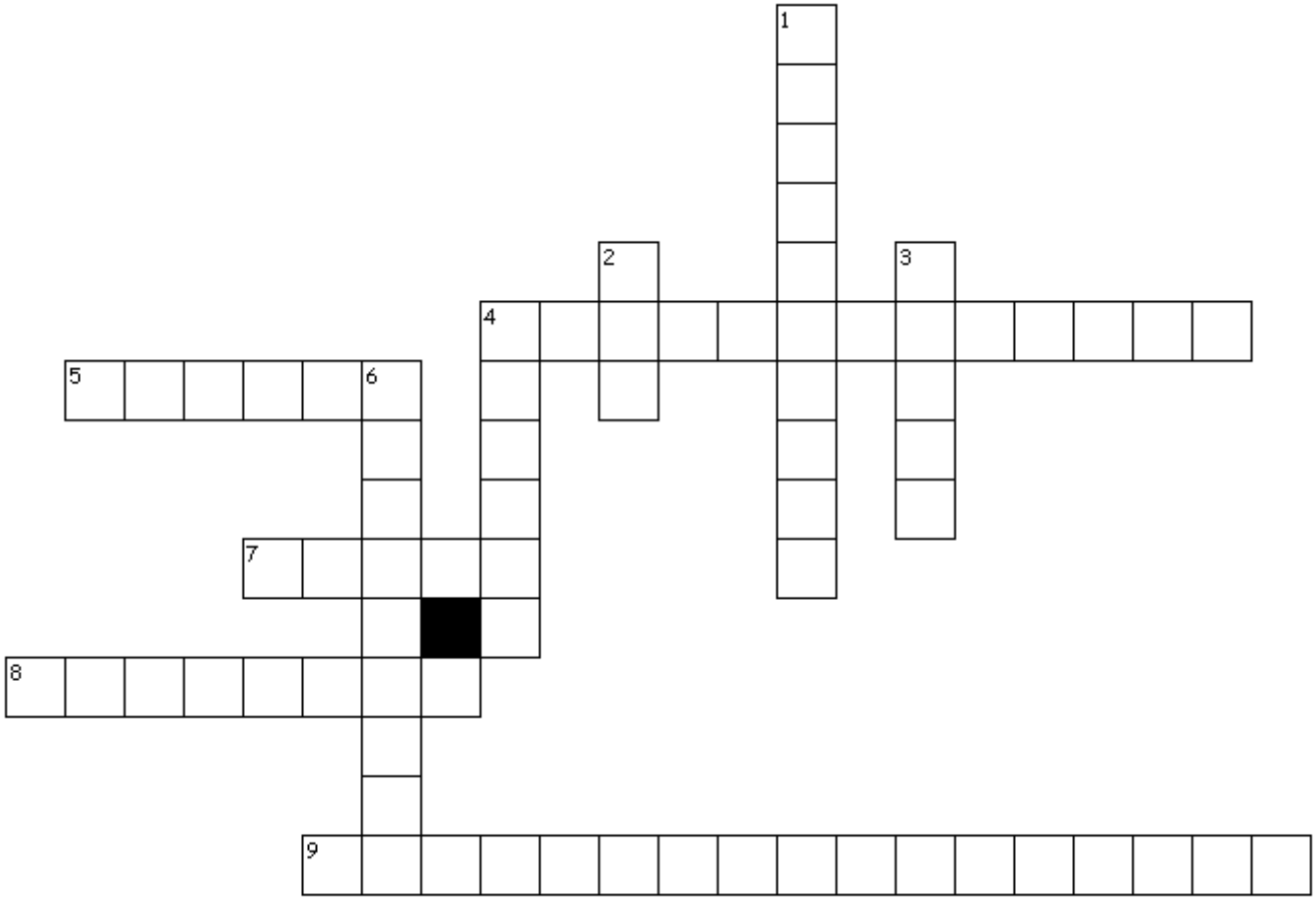
Third paragraph – Discuss what more you would have liked to have learned.

Sincerely,

Your signature
Type your name under
your signature

MANUFACTURING TECHNOLOGY (CNC SYSTEMS)

CNC Systems Crossword



Across

4. process of creating and making products
5. a scale model of a finished product
7. machine that uses a cutting tool to remove material from a part
8. the speed at which the tool moves during cutting
9. the process of designing products

Down

1. manufacturing process where most all machines and processes run with little or no human control
2. an acronym for computer numerical control
3. material used for creating parts
4. miscellaneous codes used for activities such as tool changing
6. fully functional full-sized model of a product

CNC Systems Word Search

T C V U L N H O R P M E A V T
R T I A C L A E Y N I K D Q S
L C T S R Z T I U H L B N U I
C H O L E U H M C X L Y S J N
E I V N P D N R U I I K X U I
U Q S M T E O B X U N Z J B H
K E O Y R R B C I U G H F I C
R C O I R U O Y D H K E C I A
U Z C H N P J L Z N C U R E M
V A S R E M M A R G O R P C T
L G P I Z W K B G O T S B V R
F E E D R A T E C V S Z C N W
I T R F X K Y H L P A D Z D J
R S G P N Y R D R P O D V R R
V T D A X T Y M C S K C U H C

Word List

CHUCK
CODES
COMPUTER
CONTROL
FEEDRATE
LATHE
MACHINIST
MILLING
NUMNERICAL
PROGRAMMER
STOCK
TECHNICIAN

MANUFACTURING SYSTEMS (CNC SYSTEMS)

Name: _____

Learning Objective: Upon the completion of this unit the student will be able to distinguish between the different types drilling that can be done by a CNC machining center.

Types of CNC Drilling

Directions: Unscramble then define the following types of drilling. Then answer the following short answer questions.

TERECN NIRLILGD

POTS DILNIRLG

IUSNKENICGONRT

TITWS RNLILGID

KCPE ILGINRLD

1) What is the difference between peck drilling and center drilling?

2) What is the difference between spot drilling and twist drilling?

MANUFACTURING SYSTEMS (CNC SYSTEMS)

Name: _____

Learning Objective: Upon the completion of this unit students will be able to distinguish between the different types of interpolation used in CNC machining.

CNC Interpolation

Directions: Unscramble and define the different types of interpolation then answer the following short answer questions.

LIHLECA NOOTILETPAIRN

RALNIE LOERITNITPOAN

RAOBIPLAC LITAEPORNITNO

SIRPAL TIOTPNEIRLANO

NIEPLS RITPONNIOTEAL

CURILCAR RONAILEOPINTT

Why is the function of an interpolation important in CNC machining?

What are the three basic types of movement in a CNC machine?

How is spline interpolation different from spiral interpolation?

MANUFACTURING TECHNOLOGY (CNC Systems)
Name _____

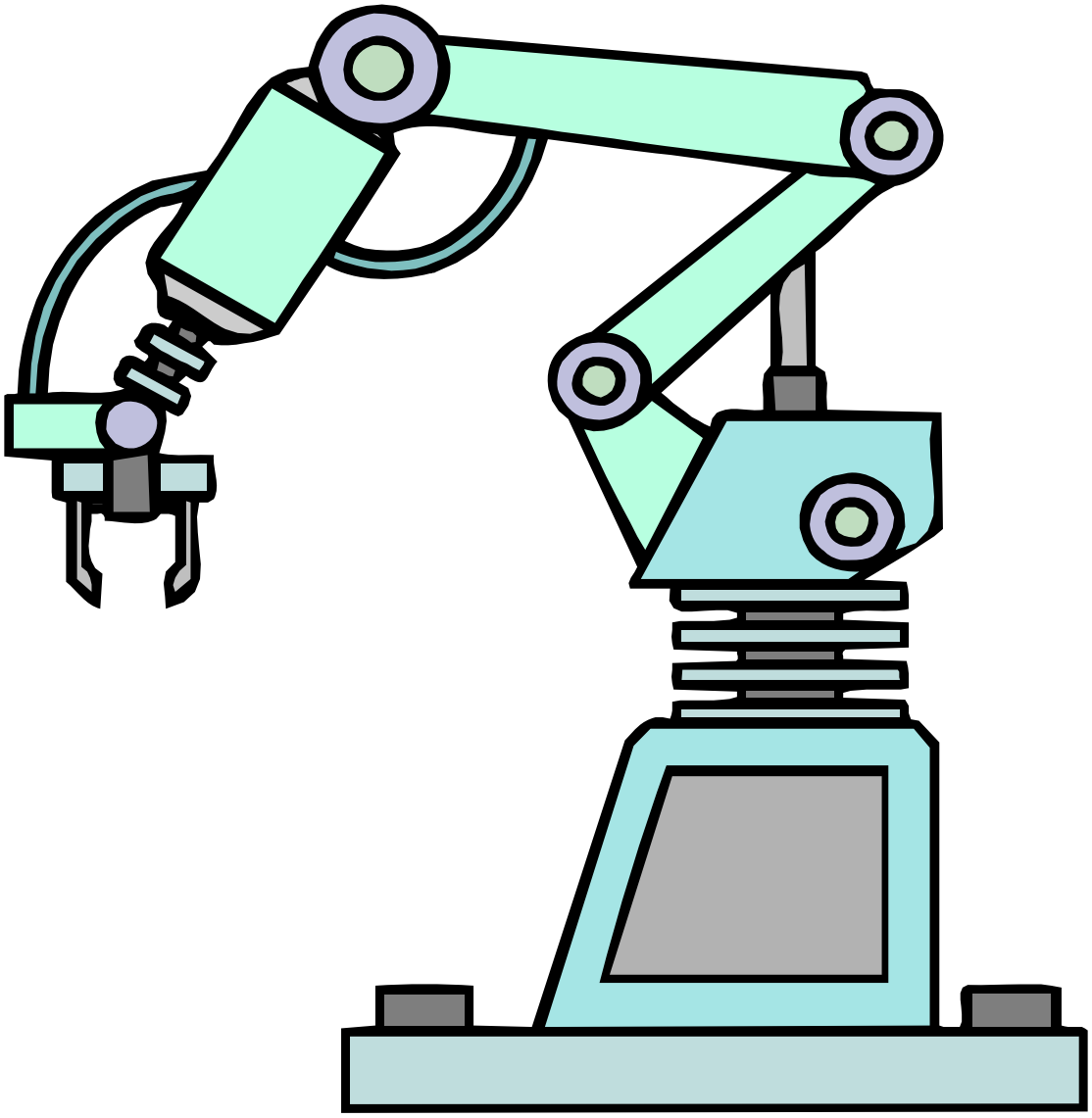
Learning Objective: After completing this unit, the student will have greater understanding of the impacts of CNC systems on machining processes.

Machine Shops: With CNC and Without

Directions: The advent of CNC systems has changed modern machining practices. On the T-graph below, contrast machining processes with and without CNC systems. Use complete systems.

WITH CNC	**WITHOUT CNC**

ROBOTICS



MANUFACTURING TECHNOLOGY

Robotics :

Upon completion of the activities in this unit, students will:

- be more aware of the safety factors concerning robots and robotics.
- gain a greater knowledge of the history of robots in modern industry.
- have increased awareness of careers in the robotics field.
- possess increased ability to research topics using the Internet and printed sources.

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will be more aware of correct safety procedures for robots and robotic systems.

The Ten Commandments of Robot Safety

Directions: Read the written passage carefully. On a separate sheet of paper entitled The Ten Commandments of Robot Safety, pick out and write numerically (1-10) the ten commandments you find. For some, more than one sentence will be used. Carefully read and select sentences that apply to one another.

Robot programs, equipment and sensors must not be relied upon to protect human safety. While a robot is working, it must be protected from human intrusion into its working area: access doors must be wired into robot controls to prevent all robot action if the doors are opened. Notice of danger to personnel must be in a prominent position on all sides of the robot working area. Emergency stop buttons, capable of stopping all robot motions and removing all power supplied must be provided in all locations easily accessed and out of the working range of the robot. All personnel in the area of the robot must be acquainted with its dangers and the use of emergency stop equipment. Signals and power connections in and out of the robot must not create hazardous situations if signals occur at improper times or are lost during operation. A robot must be programmed, operated and serviced by trained personnel. If it is necessary for personnel to be within working range of a robot during programming, great care must be taken that fingers and other body parts are not placed where they might be "pinned" if the robot moves without control. A robot operator must know the actions of the robot under his control before they take place. Programs written by another or stored in some type of memory device must be documented to allow the operator to use their contents prior to the robot's use. The robot operator must exercise the same care as a human operator using dangerous equipment. Electric cables and power lines must be positioned so that operation of the robot and related equipment will not cause breakage or failure. Pressure vessels, flammable liquid tanks, high voltage equipment, etc. must be used in a safe way. Care must be taken that work performed by the robot does not cause undue hazard to work pieces.

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will increase research and documentation skills.

Robotics Careers

Directions: Using a variety of resource materials (i.e. Internet, encyclopedias, and textbooks) research and document findings on the careers listed below. Utilize this research to compile a paper (no less than 5 typed pages, double-spaced) that addresses all the careers.

Robot programmers

Robot service technicians

Robotics engineers

Industrial maintenance technicians

Industrial engineers

Manufacturing engineers

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will increase research and documentation skills.

Robotics Research Activity

Directions: Using a variety of resource materials (i.e. Internet, encyclopedias, and textbooks) research and document findings on the topics listed below. Utilize this research to compile a paper (no less than 5 typed pages, double-spaced) that addresses all the topics.

History of robots and robotics

Modern manufacturing processes

Automation

Industrial Revolution

Robotics in Industry

MANUFACTRUING SYSTEMS (Robotics)
Name _____

Learning Objective: After completing this activity, the student will increase understanding of careers that utilize robotics systems.

Occupational Outlook Handbook

Directions: Using your WEB browser, type in the address for the Occupational Outlook handbook (http://stats.bls.gov/ocohome.hem). If this address does not work, use a search engine to locate the current address. Use the handbook to research information on occupations that utilize Robotics systems. Select one career and summarize your findings in a two-page report. The report should include the following information:

Nature of work

Working conditions

Employment

Training and Qualifications

Job Outlook

Earnings

Related Occupations

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will have increased knowledge of terms related to robotics systems.

Robotics Vocabulary

Directions: Find the correct definition for each term given and on your own paper write the term and its definition in a complete sentence. Use correct capitalization and punctuation.

Terms:

1. Axis	2. Cylindrical	3. Jointed Arm	4. Linear	5. Non-servo
6. Servo	7. Rotation	8. Rectangular	9. Spherical	10. Twist

Definitions:

1. A robot motion in which the arm rotates around some fixed point, such as a bearing.
2. A basic motion or plane of travel
3. A rotating motion in which the centerline of rotation is also the center line of the arm itself.
4. Robots whose travel is controlled by mechanisms that allow the manipulator arm to be stopped at any point or points along each axis.
5. A robot motion in which the end effecter travels a straight path.
6. Used to describe a robot that is basically a horizontal manipulator that rotates on a vertical column.
7. Used to describe a robot that has a horizontal arm that moves up and down on a vertical column and which has no rotary motion in the three main axes.
8. A robot arm containing rotary joints (shoulder and elbow) mounted on a rotating base.
9. Robots that have a limited number of positions for each axis; travel is usually limited by mechanical stops.
10. Used to describe a robot whose manipulator arm can stroke in/out, pivot vertically and rotate about the base.

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this unit, the student will have knowledge of how to write a job resume.

Robotics Resume Writing Assignment

Directions: Using your WEB browser, type in the address for Community Learning Network (www.cln.org/themes/writing_resumes.html). If this does not work use a search engine to locate the current address. Use the resources provided to develop your personal resume. You should pretend that you are applying for a position as a robotics technician.

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning objective: After completing this activity, the student will have a greater knowledge of changes in the manufacturing field.

Robotics: Changing Manufacturing

Directions: The invention of robots brought about many changes in the manufacturing industry. On the T-graph below, contrast manufacturing without the use of robots with more modern robotic manufacturing. Use complete sentences.

BEFORE	AFTER

MANUFACTURING TECHNOLOGY (ROBOTICS)

Robotics Word Search

T	H	S	R	Y	C	O	N	V	E	Y	O	R	L	F
S	T	N	Z	T	E	O	F	T	H	O	J	S	J	G
M	N	E	U	W	I	J	J	C	L	R	K	O	R	U
V	X	P	C	T	Q	F	A	H	V	Q	T	I	D	I
I	N	S	A	H	T	U	P	T	U	O	P	O	N	R
I	T	T	P	R	N	W	L	P	S	P	P	V	Z	O
Y	O	D	R	J	O	I	N	T	E	D	A	R	M	T
R	V	A	O	X	D	E	C	R	R	J	N	E	F	C
W	B	P	G	U	U	A	P	I	F	O	E	S	E	E
C	B	H	R	M	P	H	G	O	A	I	T	L	E	F
S	H	C	A	T	O	V	R	E	S	N	O	N	D	F
Z	L	T	M	Y	O	L	V	E	C	F	G	E	B	E
S	I	W	M	A	D	B	K	H	T	F	S	E	A	R
C	T	D	E	U	L	A	O	Z	U	G	L	P	C	P
F	Q	Z	R	S	C	K	P	R	N	E	B	E	K	D

Word List

CONVEYOR
EFFECTOR
FEEDBACK
GRIPPER
INPUT
JOINTEDARM
NONSERVO
OUTPUT
PNEUMATIC
PROGRAMMER
ROBOT
ROTATION
SERVO
TECHNICIAN

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this unit, the student will be more aware of safety issues concerning robotics.

Robotics Safety Exercise

Directions: Combine notes A and B into a complete sentence to form a safety rule.

EYES
- C. safety glasses
- D. belts and hydraulic/pneumatic hoses

_____
_____

EARS
- C. loud noise
- D. ear plugs

_____
_____

HANDS AND FINGERS
- C. keep clear
- D. gears and drive belts

_____
_____

HAIR
- C. long hair
- D. protective cap or net

_____
_____

CLOTHING
- C. loose clothing
- D. tangled

_____
_____

JEWELERY
- C. remove
- D. caught in machines

_____
_____

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will be familiar with job classifications.

Job Classifications in the Robotics Field

Directions: Listed below are four job classifications related to the manufacturing/robotics field. Using complete sentences, write a brief description of each job classification. Include the following in each description:

a. definition of the classification
b. training for each classification
c. on-the-job requirements in each classification
d. an example of a job in the classification

Semiskilled:

Skilled:

Technical:

Professional:

MANUFACTURING SYSTEMS (Robotics)

Name: _____

Learning Objective: Upon the completion of this unit the student will be able to distinguish between the four laws of robotics.

LAWS GOVERNING ROBOTS

Directions: Explain, in your own words, what each of Isaac Asimov's laws mean in the world of robotics.

Law Zeroth: A robot may not injure humanity, or, through inaction, allow humanity to come to harm.

Law One: A robot may not injure a human being, or, through inaction, allow a human being to come to harm, unless this would violate a higher order law.

Law Two: A robot must obey orders given it by human beings, except where such orders would conflict with a higher order law.

Law Three: A robot must protect its own existence as long as such protection does not conflict with a higher order law.

MANUFACTURING TECHNOLOGY (ROBOTICS)

Name: _____

Learning Objective: Upon the completion of this unit students will be able to understand how science fiction of the past has become reality in the world of robotics.

SCIENCE FICTION TO REALITY

Directions: Research early science fiction writings and today's industrial and recreational robots. Using this research write a one-page paper describing how those science fiction robots of yesteryear have evolved into today's reality.

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will increase his or her ability to state and defend an opinion.

Robotics: Pro and Con

Directions: Below is a list of things not needed when a factory or plant is operated by robots. As a salesman, write a letter to the president of a company. Explain the great benefits of operating a plant by robots only. Then write a letter as an employee of that company explaining the drawbacks of going to a fully robot-operated facility. The first letter will be the PRO position, and the second the CON position.

Items not found in a robotic plant:

Lights
Bathrooms
Cafeteria/break room
Parking lot
Theft lawsuits
Personnel department
Payroll department
Vacations
Layoffs

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will increase his or her ability to contrast and compare information.

Robotics Activity

Directions: Select and complete one of the following items. Use complete sentences.

A. Write a proposal to your boss describing the extra efficiency that a robotic system could bring to your business. Select the type of business for which you work.

B. Compare/contrast automated robotic systems of today to cottage industries of yesteryear.

MANUFACTURING TECHNOLOGY (Robotics)
Name _____

Learning Objective: After completing this activity, the student will gain proficiency in letter writing.

Robotics: Final Letter

Directions: You have completed the robotics unit. You will now write a letter to your instructor explaining things you have learned and things you would have liked to know more about. Follow the quid provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's Name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name),

First paragraph - Explain why you enjoyed or did not enjoy robotics.

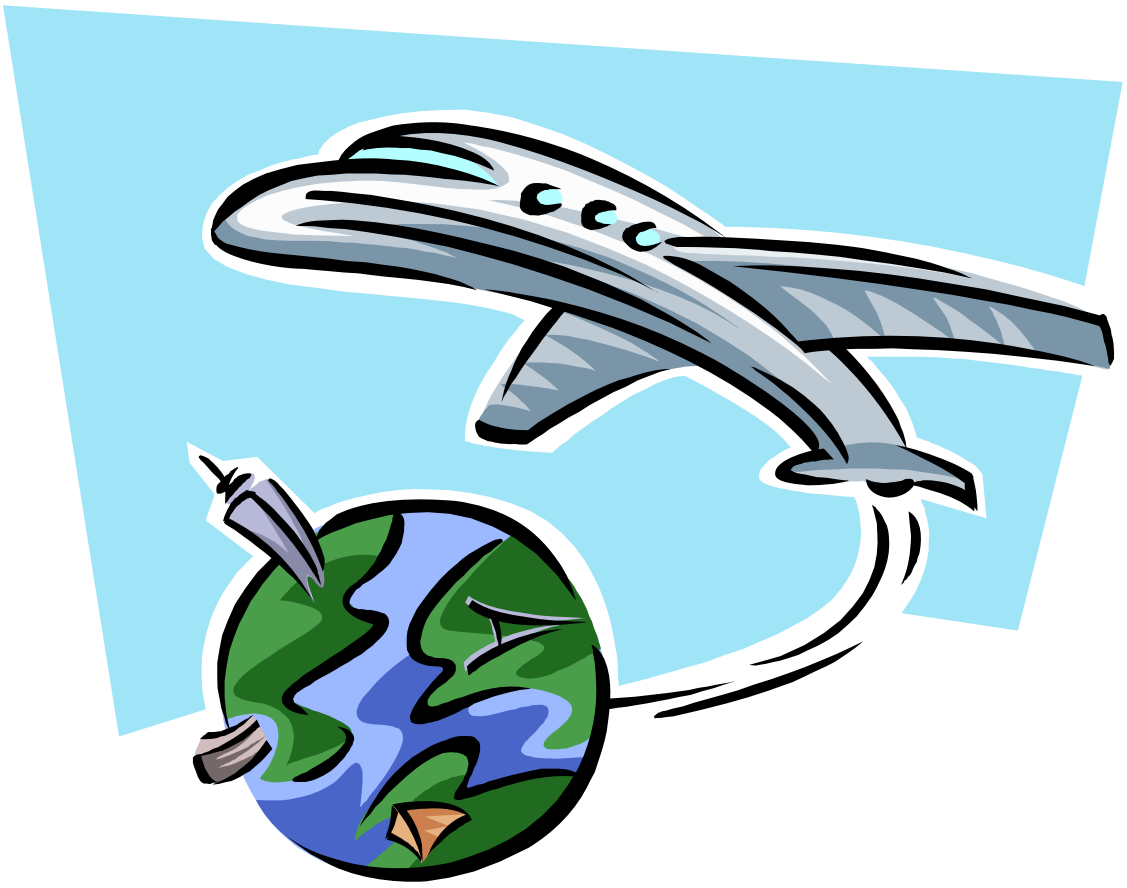
Second paragraph - Explain three important things you learned.

Third paragraph - Discuss what more you would have liked to have learned.

Sincerely,

Your signature
Type your name under
your signature

Transportation Technology



TRANSPORTATION

Upon the completion of the activities in this unit, the students will:

- Possess the ability to write about transportation terminology.
- Have experience with research based writing activities.
- Gain knowledge of careers in transportation.
- Have experience writing a business letter and replying to a job advertisement.

TRANSPORTATION
NAME _____

Learning Objective: Upon completion of this activity, the student will become familiar with certain transportation terminology.

Fill in the Blank:
Transportation Terms

Directions: Fill in the blanks in the following passage, using words from the list at the bottom of the page. Some words may be used more than once.

_____ is the movement of people, animals, or things from one place to another. Sometimes, the movement takes place within a building or group of buildings. This is _____ transportation. The ability to move products often increases their value. This is known as _____.

_____ are often used to move _____ and _____.

_____ is also known as _____. Loose cargo, such as sand or oil, is known as _____ cargo. Cargo divided into single units or cartons is _____ cargo. We transport things along _____ .

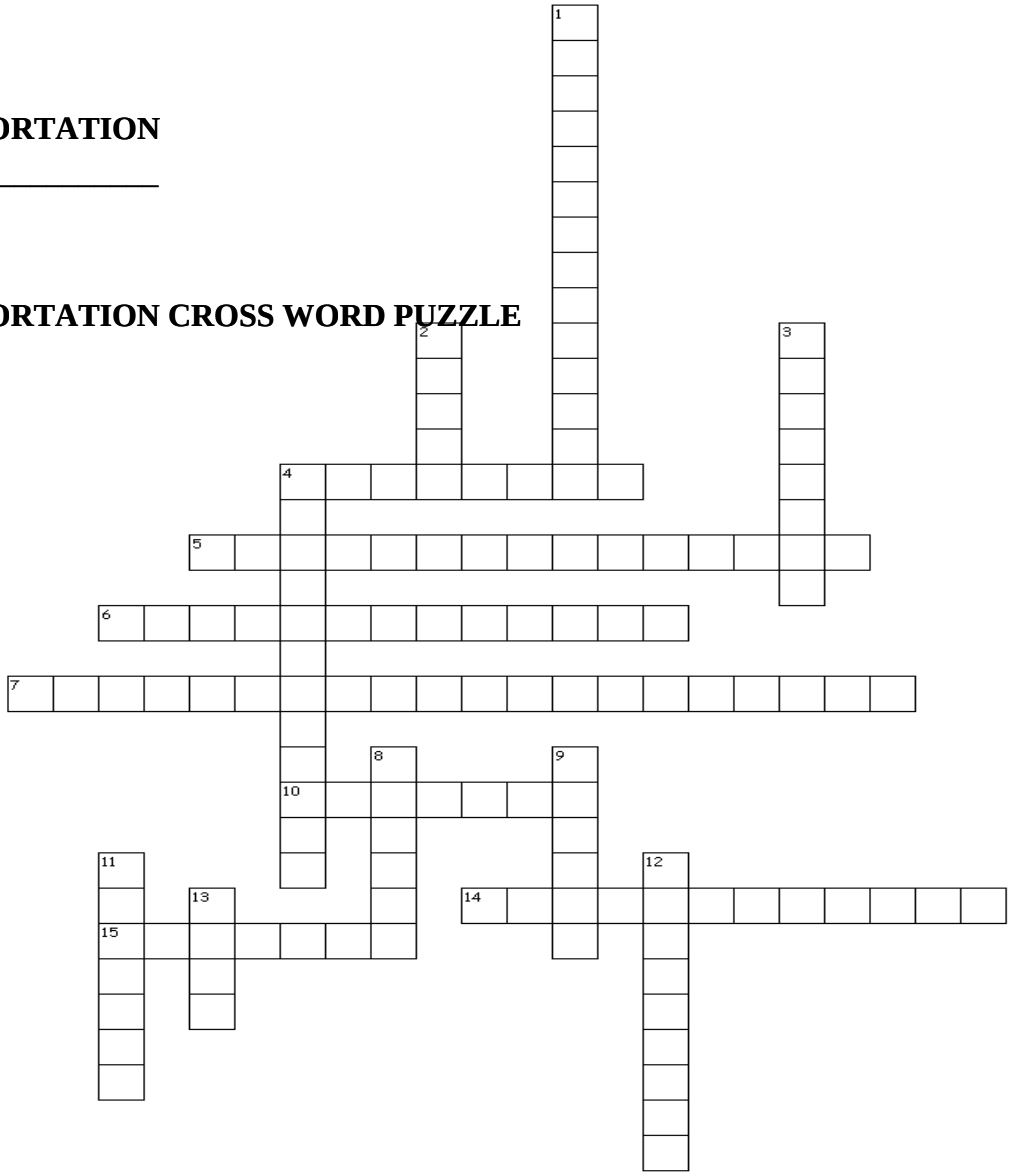
These _____ can develop into elaborate systems. If too many vehicles try to use the same _____ at once, a huge traffic jam may result. If the traffic jam becomes so bad that the vehicles can't move, it is called _____.

break bulk cargo	gridlock	time and place utility
bulk cargo	on-site	transportation
cargo	passengers	vehicles
freight	routes	

TRANSPORTATION

Name_____

TRANSPORTATION CROSS WORD PUZZLE



Across

4. Wing flaps that change the shape of the wing, increasing and decreasing the amount of lift
5. Fast-moving fluid exerts less pressure than a slow-moving fluid
6. Created when particles of air contact the moving object
7. Creates power by burning fuel inside the engine
10. Tendency to remain still or continue to move in the same straight line unless an outside force acts on it
14. Internal-combustion engine that burns fuel oil by using heat produced by compressing air
15. Designed to speed up the air passing over the surface

Down

1. Process of moving people, products, and materials from one place to another
2. A push or pull that transfers energy to an object
3. Upward force a fluid places on an object placed in it
4. Study of the forces of air on an object moving through it
8. Water vehicle that transports people and products
9. Large electromagnets create magnetic fields in order to levitate objects like trains
11. Force that pulls objects towards the center of the earth
12. The study of how things fly
13. The force of fluid friction on moving objects

TRANSPORTATION
Name _____

Transportation Double Puzzle

Directions: Unscramble each of the clue words.
Copy the letters in the numbered cells to other cells with the same number.

MEASYCDOINAR

RAPOCEEAS

NALSOERI

IILFROA

ROINULBEL CEFFET

RAGD

FIUDL CONTIIRF

RECFO

TIYVARG

TRNIAIE

BAUCYYON

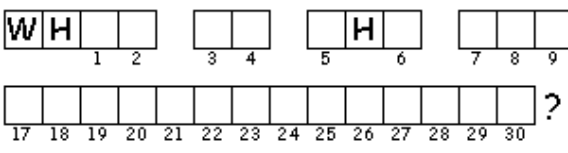
DIELES GIENEN

OEGANLIS POTNIS ENNIGE

LAGMEV

RATTIRSAOTONNP

VELSES



TRANSPORTATION

Name_____

Learning Objective: Upon completion of this activity, the student will be able to recognize certain truths about transportation systems.

Types of Transportation Systems

Directions:

1. True- False: On the line beside each statement, write **True** if the statement is correct and **False** if the statement in incorrect.
2. Matching: Match each item on the left with the correct description from the right. Write the letter of the correct description in the space provided.

True- False

_____1- Wooden sleds dragged along the ground were probably among the first carrying containers.

_____2- The "golden age" of railroads existed form 1850 to 1900.

_____3- Until the development of the space shuttle, each spacecraft could only be used once.

_____4- All transportation can be grouped into two categories: land and air.

_____5- The invention of the wheel revolutionized transportation.

_____6- Railroads declined with the development of commercial airlines.

_____7- In the late 1950's, the United States sent up the world's first orbiting artificial satellite.

_____8- Space launches became more economical with the development of the space shuttle.

_____9- Aircraft carriers are sometimes called "floating cities."

_____10- Barges allow fast movement of bulk freight.

Matching

_____11- subway	a. Used to carry materials inside buildings or short distances
_____12- monorail	b. Allows large numbers of people and sometimes vehicles to cross small bodies of water
_____13- conveyor belt	c. Major form of mass transportation in large cities
_____14- pipeline	d. Mostly used for sightseeing or amusement park transportation
_____15- ferries	e. Restricted to a single route, but allows 24-hour-a-day operation

TRANSPORTATION

Name _____

Learning Objective: Upon completion of this activity, the student will become familiar with types and modes of transportation.

Types and Modes of Transportation

Directions: Match each item in the left-hand column with the correct description from the right-hand column. Write the letter of the correct description in the space provided. Some descriptions will not be used and no description will be used more than once.

____ 1. Payload

____ 2. Slurry

____ 3. Barge

____ 4. AMTRAK

____ 5. Booster rockets

____ 6. Rolling stock

____ 7. Airspace

____ 8. Unit train

____ 9. Global Positioning System

____ 10. Commuter service

A. Provides long-distance rail passenger service
B. Type of military aircraft
C. Regular back-and-forth passenger rail service
D. Solution used to ship solid materials through a pipeline
E. Used to push a payload
F. The cars pulled behind a train engine
G. Includes locomotives, railroad cars, and maintenance vehicles
H. Anything transported into space
I. The area above the earth
J. Satellite tracking system for vehicles
K. Large, ocean-going ship designed to carry containers
L. Large, flat-bottomed water vehicle
M. Carries the same type of freight in the type of car to the same place time after time

Directions: On the line beside each statement, write **TRUE** if the statement is correct or **FALSE** if it's incorrect.

_____ 11. A blimp is usually self-powered by engines and propellers like an airplane.
_____ 12. Air trips fewer than 500 miles are not considered a good value.
_____ 13. An intrastate trucking firm carries freight from one state to another
_____ 14. Pipeline transportation is one-way
_____ 15. One disadvantage of pipelines is that solids, such as coal and gravel, cannot be shipped through them
_____ 16. Space shuttles can be used over and over again
_____ 17. High-speed rail passenger service will be handier than air travel for most travelers and will cost about the same
_____ 18. Distribution pipelines are the main long-distance lines that transport the cargo.

TRANSPORTATION
Name _____

Learning Objective: Upon completion of this activity, the student will be exposed to some careers related to land and water transportation.

Careers in Land and Water Transportation

Directions: Choose one of the transportation jobs listed below. Then, list the things that you think you would enjoy about working in that job. After writing down all of the things you would like, make a list of the things that you think you would dislike about the job. On a separate sheet of paper, share your list with the class in a brief report and turn it in to your instructor.

RAILROAD BRAKER

Entry-level position for high school graduate. On-the-job- training provided. Must pass physical exam. Should have good mechanical aptitude and ability to work well with people. May lift up to fifty pounds. Apply in person to S & K Railroad Company, 900 West Stephens Drive, Chicago, IL 60020. No phone calls.

MARINE ENGINEER

Engineer needed to supervise and coordinate activities of crew in operating and maintaining engines and electrical equipment aboard ship. Degree in marine engineering required. Must have previous experience. Excellent salary and benefits package. Submit resume to: North Shore Shipping Company, 2300 East 55th Street, Baltimore, MD

SAFETY COORDINATOR

Interstate trucking company has immediate opening for a safety coordinator. Oversee safety traffic program and instruct drivers in traffic and safety regulations. Will also investigate accidents and direct transfer of cargo in emergencies. Background in trucking industry needed. Salary and benefits offered. Send resume to: Warner Trucking Lines, 200 South Industrial Drive, Dayton, OH 62402.

Travel Agent

Travel company specializing in cruises seeks travel agent with exceptional telephone skills, high school diploma, and travel school education. Prefer applicants with computer knowledge and skills with computerized reservation systems. Send resume to: Magic Cruise Specialist, 800 North Second Avenue, Westlake, NJ 24202.

DISPATCHER

Trucking company needs dispatcher to relay information and orders that coordinate the movement of vehicles and freight. Entry-level position requires high school diploma and one year of post-secondary training. Knowledge of computer-aided dispatch system a plus. Will provide on-the-job training. Must have good telephone, radio, and record keeping skills. Apply immediately at: Highway Trucking, 3009 Fulton Parkway, Kansas City, KS.

TRANSPORTATION
Name _____

Learning Objective: Upon completion of this activity, the student will be exposed to some careers related to aviation.

Careers in Aviation

Directions: Choose one of the transportation jobs listed below. Then, list the things that you think you would enjoy about working in that job. After writing down all of the things you would like, make a list of the things that you think you would dislike about the job. On a separate sheet of paper, share your list with the class in a brief report and turn it in to your instructor.

AIR FREIGHT COORDINATOR

Manufacturing company with growing international business requires someone to manage and track air shipments. Ideal candidate will have experience in airfreight operations. Must be able to work against tight deadlines. Must be able to work easily with others and quickly resolve problems. Send hand-written resume to Integral International Parts, P.O. Box 190, Little Rock, CA, 83625.

AIRCRAFT MECHANIC

Graduation from a certified technical school required, plus 3 years on-the-job experience in repair of propeller-driven aircraft. Must be able to work under tight deadlines. Prior references essential. Send resume to: Ace Aircraft, 2987 Rampart Drive, Topeka KS 45987. No phone calls, please.

AIR TRAFFIC CONTROLLER

Prior experience at a medium-sized airport a must. Ability to communicate clearly, pay attention to detail, and work calmly under pressure. Attractive wage and benefit package to right candidate. To schedule a confidential interview, call Todd Foster, (378) 672-9061.

CATERING COORDINATOR

Large regional airline requires person to manage in-flight meals. Responsibilities will include the purchase and inventory of in-flight meals and snacks. Must be willing to relocate to Chicago. Administrative experience in food service helpful. Send resume to InterAir, 2319 W. Smithville Road, Pontiac, IN 37321.

Flight Attendant

Major domestic airline has immediate openings for flight attendants. No experience needed. If you enjoy working with the public, like to travel, and are interested in an exiting career in aviation, this could be the job for you. Must be flexible and at ease with people. Must be willing to relocate. Selected candidates will receive free paid training at our company training institute. Call for an interview: (110) 345-9467. Ask for Anne Smith.

RESERVATION ASSISTANT

Friendly, outgoing person to handle airline reservations in busy airport. Reservations experience preferred, but we will train appropriate candidate. Excellent benefits. Send resume to: Comet Aircraft Transport, Inc., 4560 Grainbelt Avenue, Oak

TRANSPORTATION

Name _____

Learning Objective: Upon completion of this activity, the student will have experience answering a job advertisement.

Answering a Job Advertisement

Directions: Read the paragraph below about answering a job advertisement and write at least two pages if handwritten, or one page typed. It must be single-spaced with twelve point Times New Roman font if typed.

Perhaps many times during your work life you will look for a job by answering an advertisement. Some ads ask that you stop by and fill out an application. Others want you to write to them, telling them about yourself and your qualifications. Your letter then becomes an advertisement for yourself and your abilities.

For this activity, you will write a letter answering a job advertisement. You may do it one of two ways. You may put all the information requested in the letter itself, or you may write a short introductory letter and put your work history in a resume. (A resume is a formal listing of facts about your education and jobs you have had.)

Remember, you are "selling" your abilities to an employer. Keep the following in mind:

- Put yourself in the employer's place. What would you be interested in if you had to hire someone for the same job?
- What is the benefit to the employer who hires you? What can you do that makes you a good choice?
- The employer who reads this letter will not have a chance to meet you first. He or she will not know in advance what a terrific person you are. Your letter will be your representative. What will it say about you to the reader? Of course, it will be filled with facts, but how will it look? Will it be neat or sloppy? Will it be filled with mistakes? Will it be friendly and confident or cold and uncertain? Here's the advertisement you must answer:

Help Wanted: Material Moving Equipment Operators for Space Station

The National Aeronautics and Space Administration is seeking transportation workers of all kinds to work on board its planned space station. If you have some experience in transportation or construction, either in school or on the job, we'd like to talk to you.

Workers will live on board the space station for one year. Salaries are comparable to those on earth, plus room and board. The space station operates around the clock, and all shifts are available.

Please write, giving your work background and education. Tell us what job you'd like and why you'd be interested in working on the station. Reply to: Captain J. L. Picarde, NASA recruitment, 1007 Galaxy Dr., Your Town.

TRANSPORTATION

Name _____

Learning Objective: Upon Completion of this activity, the student will be exposed to careers in the field of transportation.

Occupational Outlook Into Transportation

Directions: Using your WEB browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm). If this address doesn't work, use a search engine to locate the current address. Use the handbook to research information on occupations that involve transportation. Select one career and summarize in a two-page report what you discovered. Include the following:

1. Nature of work
2. Working conditions
3. Employment
4. Training and Qualifications
5. Job outlook
6. Earnings
7. Related Occupations

TRANSPORTATION
Name _____

Learning Objective: Student will think about the challenges involved in space travel and exploration. Student will think about the benefits and drawbacks of space travel and exploration.

SPACE TRAVEL & EXPLORATION

Directions: On a separate sheet of notebook paper, answer each of the following essay questions using complete sentences.

1. Discuss the following "What ifs":
   a. What if…the Soviet Union had never launched the Sputnik?
   b. What if…the Apollo Program had never resulted in a landing on the Moon?
   c. What if…no one had ever tried to break the sound barrier?
   d. What if…the Soviet Union had landed on the Moon first?
   e. What if…you were offered an opportunity to ride on the Space Shuttle?

2. Discuss why people want to go into space and debate whether human space exploration should be replaced with robotic missions. Are there compelling reasons why humans should have a presence in space travel?

3. Explain how the exploration of space is similar to an expedition to Mt. Everest.

4. Discuss the value of the Apollo Lunar Mission Program. Support your opinion with specifics.

5. Discuss the value of a manned mission to Mars. Support your opinion with specifics.

6. Discuss the benefits that could result from private industry's participation in the commercialization of space.

7. Explain how space travel has affected people's lives. How has it affected your life?

TRANSPORTATION

Name _____

Learning Objective: Students will think about the following:

1. At some time in the future, there likely will be cities in space.
2. The first of these cities will probably be lunar based, Mars based, or space based (orbiting Earth).
3. Designers of such a city will have to work within the parameters of the unique conditions of the base environment.
4. Designers will have to consider the conditions and services that will be necessary for people living in the city.

SPACE CITY

Think about the design of a large city near your area. What materials are common in buildings and other structures? What kinds of recreation facilities are available? How is power provided to the residents? What are the main businesses and industries carried out in the city? Are the city's characteristics related to its geography, location, or available natural resources? In what ways? In the future, we are likely to have cities in space—either lunar based, Mars based, or space based (orbiting Earth).

Directions: Design either a lunar based, Mars based, or space based city. Prepare written answers on a separate sheet of paper to the following questions.

1. What building materials will be available?
2. Which jobs will be required; what skills will people need?
3. What kind of recreational facilities should be available for the inhabitants?
4. How will power, food, water, oxygen—the necessities—be provided?
5. What conditions and services will people need?
6. Are there any special scientific research projects that could be carried out on this base that are unique to this location?
7. What types of businesses and commercial services will be most likely to thrive in this city?

TRANSPORTATION

Name _____

Learning Objective: Upon completion of this activity, the student will research and think about aerospace technology.

Aero Quiz

Directions: Using your WEB browser, type in the address for the NASA Education program (http://education.nasa.gov/). If this address doesn't work use a search engine to locate the current address. Use this website to answer the following questions:

1. When a commercial airliner is cruising at 35,000 feet, the temperature of the air outside the aircraft is around minus 66 degrees Fahrenheit. However, instead of heaters, air conditioners must be used to provide comfort for the passengers and crew. Why?

2. What was the first sonic boom created by humans? Was it when Chuck Yeager broke the sound barrier in the Bell X-1? Or had people created sonic booms before that?

3. "Let's see now," the FAA aircraft certification engineer said to himself. "95.4, 101.1, 97.8... add those together... Got it! 103.5!" Is the engineer right? Or can't the FAA get good help these days?

4. When rising to the surface, a major concern of deep-sea divers is contracting the bends. Do pilots ever need to be concerned with getting the bends?

5. The very first wartime air-to-air combat victory, interestingly enough, did not involve the use of guns. What happened?

TRANSPORTATION

Name _____

Learning Objective: Upon completion of this activity, the student will be able to discuss and describe certain areas of transportation vehicles.

Transportation Vehicles

Directions: Use the Internet, library, textbooks, or whatever research medium is available to you to answer the following essay questions. Use a separate sheet of paper to record your answers. Remember to use complete sentences and use correct grammar and spelling.

1. Describe a transportation vehicle.
2. List the factors considered in developing a vehicle structure.
3. List the five systems present in a transportation vehicle.
4. Describe the types of land, water, and air transportation vehicles.
5. Explain the difference between guidance and control in transportation systems.
6. Describe how vehicle suspension systems operate.
7. Describe how the five vehicle systems are applied to common land, water, and air transportation vehicles.

TRANSPORTATION

Name _____

Learning Objective: Upon completion of this activity, the student will be able to discuss and describe certain areas of transportation systems.

Operating Transportation Systems

Directions: Use the Internet, library, textbooks, or whatever research medium is available to you to answer the following essay questions. Use a separate sheet of paper to record your answers. Remember to use complete sentences and use correct grammar and spelling.

1. Explain how the speed of transportation has increased over time.
2. Describe the factors to be considered when developing a transportation system.
3. Explain the differences between personal and commercial transportation systems.
4. Describe how transportation modes interface into a system.
5. List and describe the common elements of all transportation systems.
6. Describe transportation routes.
7. Describe transportation schedules.
8. Explain the parts of transportation terminals.
9. Explain the difference between domestic and international transportation.

TRANSPORTATION

NAME _____

Learning Objective: Upon completion of this activity, the student will have experience writing a business letter.

Transportation: Final Letter

Directions: You have completed the Transportation unit. You will now write a letter to your instructor explaining what you have learned and the things that you would like to know more about. Follow the guide provided and write a rough draft. After correcting any errors you find in the rough draft, redo the letter on a word processor.

Your Street Address
City, State, Zip Code
Date

Your Teacher's Name
Your School's name
Your School's Street Address
City, State, Zip Code

Dear (Teacher's Name)

First paragraph- Explain what you enjoyed or did not enjoy about transportation.

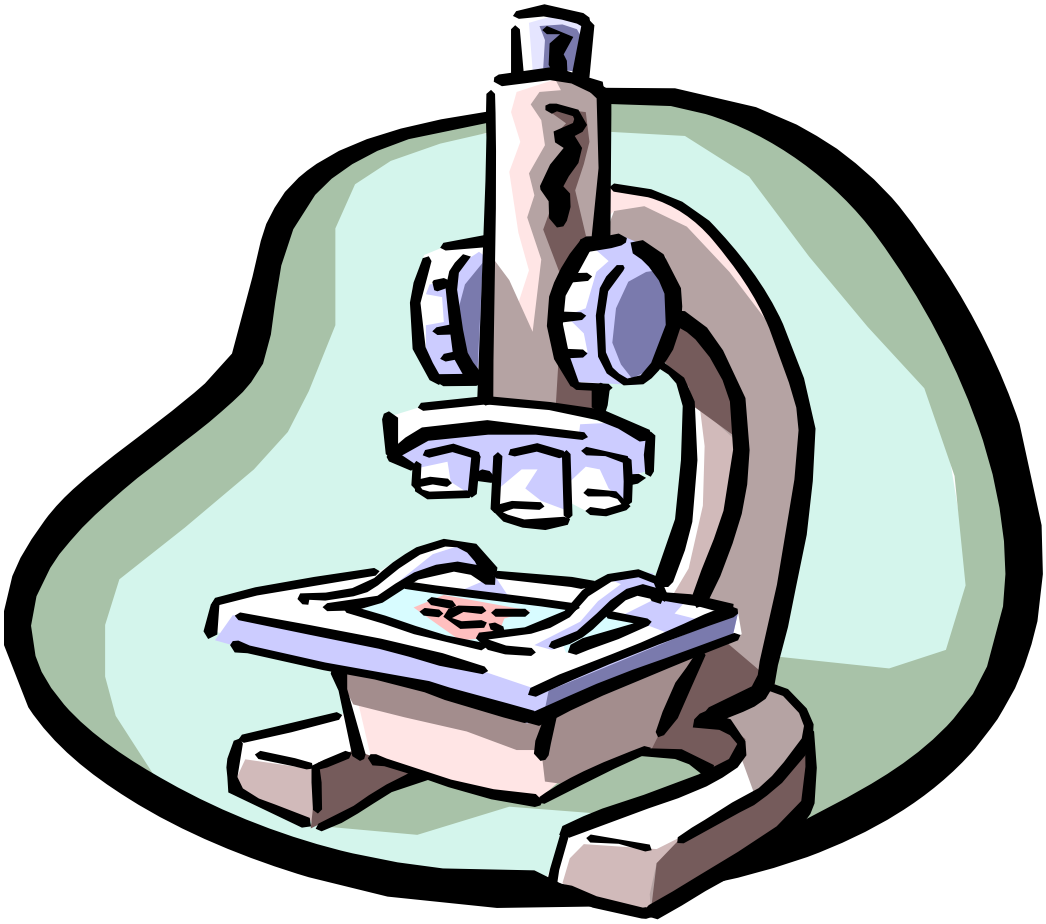
Second paragraph- Explain three important things that you learned.

Third paragraph- Discuss what more you would have liked to learn.

Sincerely,

Your Signature
Type your name
under your signature.

Biological Systems



BIOMATERIAL APPLICATIONS

BIOMATERIALS APPLICATIONS

Upon completion of the activities in this unit, the students will:

- have a better understanding and appreciation of medical technology.
- gain insight to career opportunities in the field of biomaterial applications by researching various topics.
- be able to demonstrate writing competency in the area of biomaterial applications.
- possess increased knowledge concerning how medical technology is used to produce
- products and services that meet society's needs.

BIOMATERIAL APPLICATIONS

Name _____

Learning Objectives: Upon completing this activity the student will be able to list and describe some of the education, skills, background, etc.

Job Application /Worksheet: Mining Engineer

Directions: Complete the following worksheet pertaining to a position as a mining engineer using complete sentences. Use your imagination and be innovative if necessary.

Education:

1. _____
   _____
2. _____
   _____
3. _____
   _____

Work Experience:

1. _____
   _____
2. _____
   _____
3. _____
   _____

Other Experiences/Information:

_____
_____
_____
_____
_____
_____
_____
_____

BIOMATERIALS APPLICATIONS
Name _____

Learning Objective: Upon completing this activity the student will be able to list and describe qualifications needed/preferred to become a Chemical Engineer.

Job Skills: Chemical Engineer

Directions: Briefly list the skills used as a chemical engineer.

1.

2.

3.

4.

5.

6.

7.

9.

10.

11.

12.

BIOMATERIALS APPLICATIONS
Name _____

Learning Objective: Upon completing this activity the student will be able to write a letter to a government official explaining his/her views on a current mining/ecology related issue.

Letter to the Secretary of Interior

Directions: Write a letter to the Secretary of Interior explaining your views on a current mining/ecology related issue. Elaborate on three to five main points that you wish to support.

BIOMATERIAL APPLICATIONS
Name _____

Learning Objectives: Upon completing this activity the student will be able to draw an organizational chart of a mining enterprise. The student will also briefly describe the function of each department/section using complete sentences.

Mining Organizational Chart

Directions: Draw an organizational chart of a mining enterprise. Briefly describe the function of each department/section using complete sentences.

BIOMATERIAL APPLICATIONS
Name _____

Learning Objective: Upon completing this activity the student will be able to list ten safety tips in two of the areas listed below using complete sentences.

Safety Tips

Directions: List ten safety tips in two of the areas listed below using complete sentences.

1. Solid waste disposal
2. Microbial leaching
3. Plastics manufacturing
4. Sewage waste disposal
5. Processing metals and stones

BIOMATERIAL APPLICATIONS
Name _____

Learning Objective: Upon completing this activity the student will be able to compare current biomaterial applications activities with earlier practices.

Then and Now

Directions: Choose one of the topics listed below and compare current biomaterials application practices with earlier practices.

1. Comparing mining now with mining prior to the 1900's.
2. Compare how the current use of plastics has replaced many materials used prior to 1950.
3. Compare how mining resources are located now with methods used before 1950.
4. Compare how sewage waste treatment and disposal is done now with methods used prior to 1950.

BIOMATERIALS APPLICATIONS
Name _____

Learning Objective: Upon completion of this activity the student will be able to distinguish between terms and practices used in microbial leaching in the mining industry as opposed to those used in developing bio-derived materials.

Developing Bio-Derived Materials vs Microbial Leaching in the Mining Industry

Directions: Write a brief summary describing one of the terms/processes used under the headings on bio-derived materials and microbial leaching respectively.

BIO-DERIVED MATERIALS

Plastics
Polysaccharides
Enhanced oil recovery
Xanthan

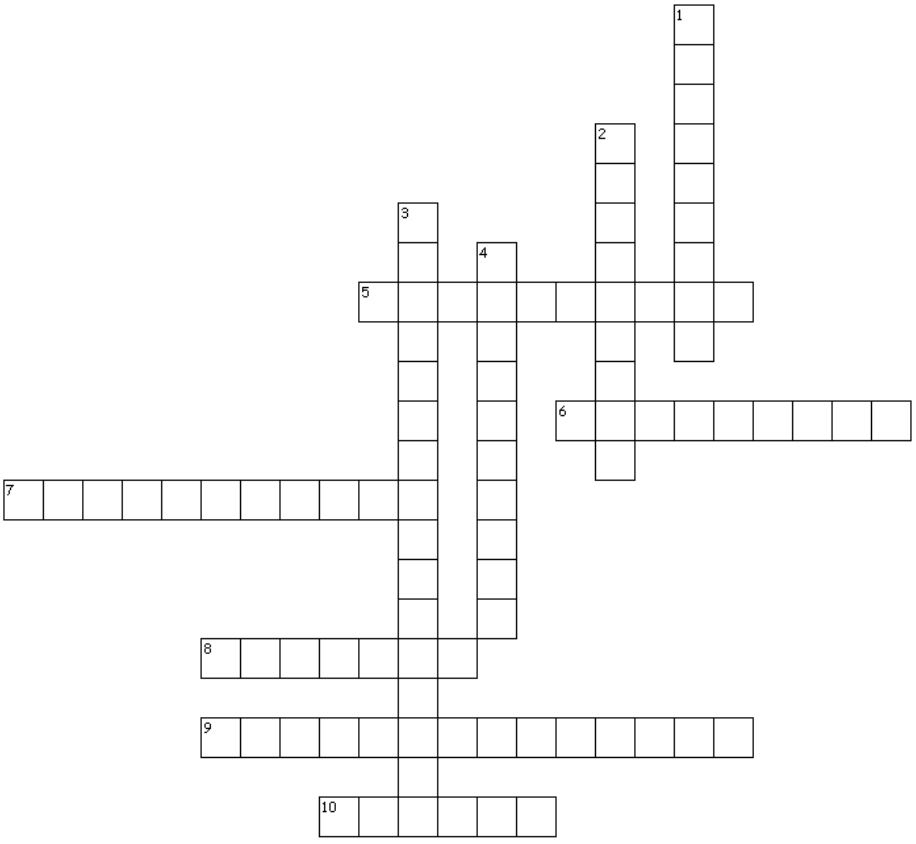
MICROBIAL LEACHING IN THE MINING INDUSTRY

Biohydrometallurgy
Lixivant
Microbial leaching
Extracellular complexation

BIOMATERIALS APPLICATIONS

Name_____

BIOMATERIALS APPLICATIONS



Across

5. changing to a different property
6. substance released from a solution
7. water that sinks into the soil
8. microbial polysaccharide
9. microbes turn metal into gas
10. rainwater that flows away from overburden

Down

1. acidic liquid that protects bacteria

ACROSS

5. changing to a different property
6. substance released from a solution
7. water that sinks into the soil
8. microbial polysaccharide
9. microbes turn metal into gas

10. rainwater that flows away from overburden

DOWN

1. acidic liquid that protects bacteria
2. food poisoning
3. unwanted change caused by germs
4. rocks low in wanted metals

BIOMATERIALS APPLICATION
Name_____

Learning Objective: upon completing this activity the student will be able to write three paragraphs about careers in biomaterials application.

Careers: Paragraph Writing

Directions: Write three paragraphs on a career related to biomaterials applications using the guidelines stated below.

1st paragraph – Introduce the career.
2nd paragraph – Provide background information.
3rd paragraph – Write the conclusion.

BIOMATERIALS APPLICATIONS
Name_____

Learning Objective: Upon completing this activity the student will be able to complete select sections of a job application.

Job Application

Directions: Complete the select sections of the job application as though you were qualified for the position of one of the careers listed below. Be resourceful. Use your imagination.

Position: Microbiologist (Engineer, Environmentalist, or Chemist)

Education:_____
_____
_____
_____

Experience:_____
_____
_____
_____

Personal Interest:_____
_____
_____
_____

BIOMATERIALS APPLICATIONS
Name_____

Learning Objective: Upon completing this activity the student will be able to write a news article about a biomaterials application related topic.

News Article

Directions: Write a news article about a biomaterials application related topic.

BIOMATERIALS APPLICATIONS
Name_____

Learning Objective: Upon completing this objective the student will be able to write ten safety rules for a biomaterials applications related task/job.

Safety Rules

Directions: Using complete sentences write ten safety rules for your choice of one of the following tasks/jobs.

Mining engineer
Chemical engineer
Environmentalist
Waste management technician
Hazardous materials technician

BIOMATERIALS APPLICATIONS
Name_____

Learning Objective: Upon completing this activity the student will be able to write complete sentences using sentence fragments.

Sentence Completion

Directions: Write complete sentences using the following sentence fragments:

1. field of biomaterials applications
2. involves the use of
3. recover polluted run-off
4. are currently being reduced
5. in making new products
6. normally produce using
7. but the future is
8. change the system
9. and drainage ponds
10. the liquid that passes

BIOMATERIALS APPLICATION

Name _____

Learning Objective: Upon completing this activity the student will be able to describe several careers using two or more complete sentences per career.

Sentence Writing: Careers

Directions: Describe any two of the following careers using two or more complete sentences.

1. chemist
2. chemical engineer
3. mining engineer
4. petroleum engineer
5. research engineer
6. environmental analyst
7. metallurgist
8. microbiologist
9. patent agent
10. pollution control technician

BIOMATERIALS APPLICATION
Name _____

Learning Objective: Upon completing this activity the student will be able to unscramble the following terms and use them in complete sentences.

Word Unscramble

Directions: Unscramble the following terms and use each of them in a complete sentence.

1. eernigne
2. istmech
3. calimehc
4. ingnim
5. muelortep
6. hcraeser
7. latnemnoriven
8. tsylana
9. tsigrullatem
10. enttap

BIOMATERIALS

E R Z R O S Y N I U Q U U Y G

X B E A L D E I X A G B T N L

N O I T A Z I T A L O V I H I

E Q M N A X X S R O P T K F X

N U C Y X W J M I D R Y N K I

G A W I C S D A S E H I E X V

K M C T R O M N V V L Z D V I

P G M R G V T N U X L A R P A

D X S K B H O O A O G A U Y N

R G Y N Z C R N X Y R Y B Q T

L I B E R A T E D I A G R B I

L W E J M H O S B R N J E O C

D O H A A F D Q B H L C V W N

F F O N U R E A T Y U U O C R

W C V T Y X M R O F J U L K S

WORD LIST

CONVERTING
GROUNDWATER
LIBERATED
LIXIVIANT
MYCOTOXIN
OVERBURDEN
RUNOFF
VOLATIZATION
XANTHAN

BIOMATERIAL APPLICATIONS
Name _____

Learning Objective: Upon completing this activity the student will be able to write a paragraph by completing a sentence fragment.

Paragraph Completion

Directions: Write a paragraph by completing the sentence fragment.

There are many applications _____

BIOMATERIALS APPLICATIONS
Name_____

Learning Objective: Upon completing this activity the student will be able to describe how the tools /processes listed below are used to produce materials.

Tools/Processes

Directions: Describe how each of the tools/processes are used to produce materials.

Runoff pond_____
_____
_____
_____
_____

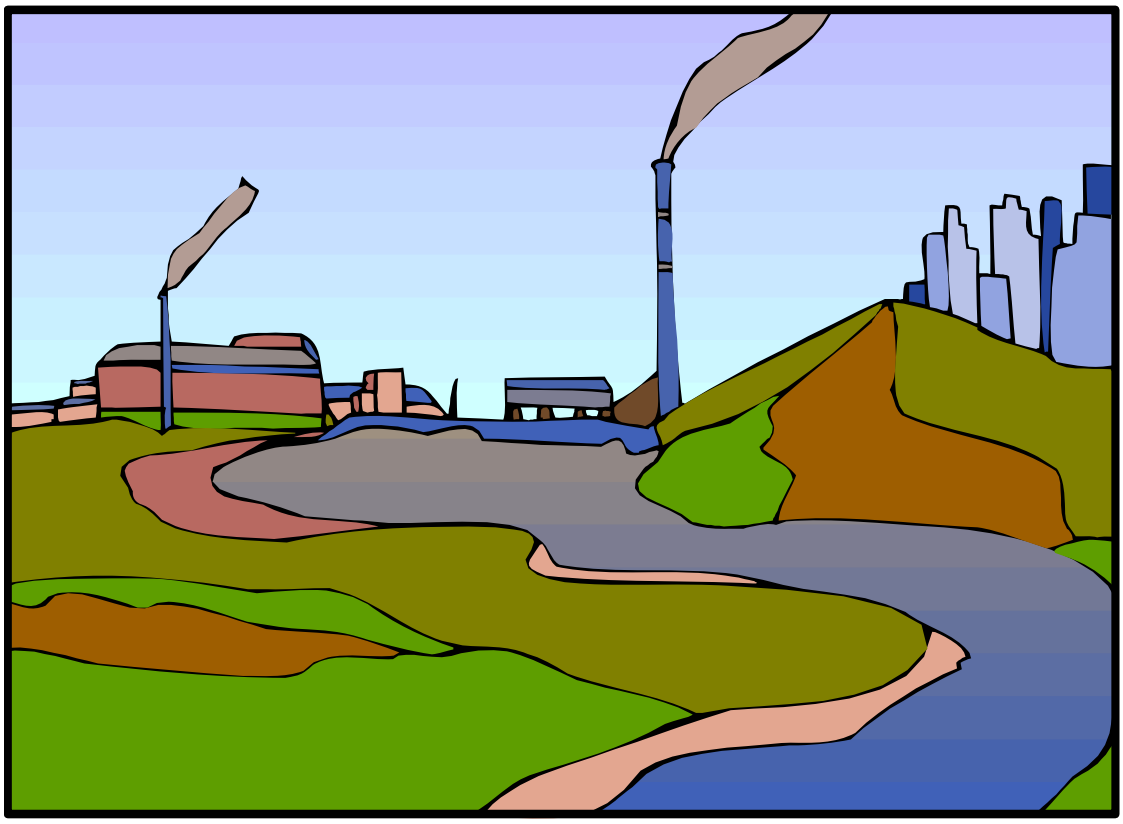
Settling tank _____
_____
_____
_____
_____

Copper leaching process _____
_____
_____
_____
_____

Volitization _____
_____
_____
_____
_____

Intracellular accumulation _____
_____
_____
_____
_____

ENVIRONMENTAL



ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this unit students will be able to distinguish between the different types of pollutants and ways to control pollution.

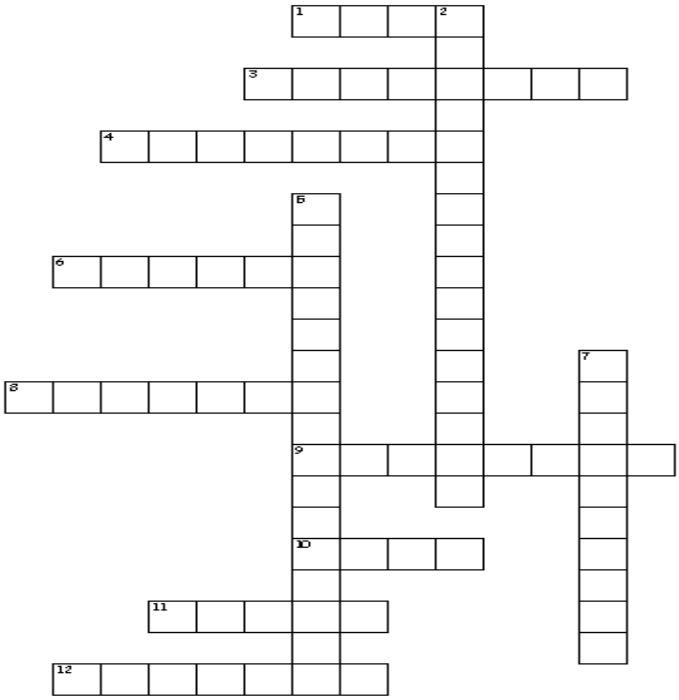
POLLUTION

Directions: Define the following terms then write a one-page summary (using these terms) on what you think needs to be done to control pollution.

Terms

Acid Rain
Air Pollution
Aquifer
Conserve
Dioxin
Greenhouse Effect
Nitrogen Oxide
Pesticides
Recycle
Sanitary Landfill
Smog
Sulfur Dioxide
Toxic
Water Pollution

ENVIRONMENTAL CONCERNS



Across

1. Hydrocarbons combined with nitrogen oxides and sunlight
3. Avoiding wasteful uses of items.
4. Byproduct of fossil fuel use
6. An industrial toxin found in many rivers
8. Pools of drinking water found below ground
9. Material that passes through the soil
10. A hole that waste is thrown in.
11. Poisonous substances
12. Reusing all or part of a substance.

Down

2. Rise in the earth's temperature caused by the high amount of industrial gases found in the earth's atmosphere.
5. A type of landfill designed to protect groundwater
7. Agricultural chemical that pollutes the aquifer and many of our waterways

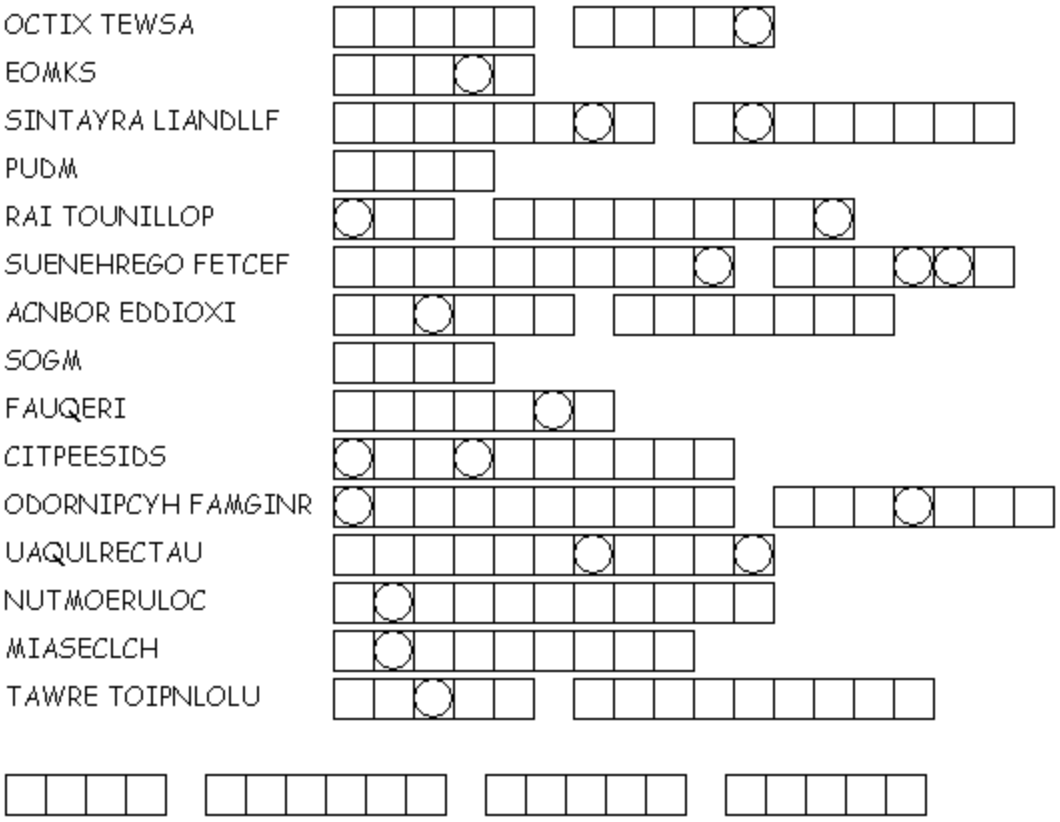
ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this unit students will be introduced to various environmental terms.

ENVIRONMENTAL TERMS

Directions: Unscramble the following words then unscramble the letters that are found in the squares to form the hidden phrase.



ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will understand the problems associated with waste systems.

WASTE MANAGEMENT

Directions: Research the differences between a dump and a sanitary landfill, the construction of a sanitary landfill, the types of wastes that are thrown into a sanitary landfill, the types of problems that these wastes can pose to our water and environment, and any alternative solutions to the problems that this abundance of waste poses.

Using this research write an essay that fully describes waste management. Furthermore, write one paragraph as a part of the essay that expresses your opinion on the future of waste management.

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will use their knowledge to describe different types of environmental problems.

ENVIRONMENTAL PROBLEMS

Directions: It has been said that a picture is worth a thousand words. With this in mind look at each of the pictures and write 1-2 statements that describe what you see and why you think it would be an environmental concern.

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will understand the role that hydroponics serves in our society

AGRICULTURAL EFFECTS OF HYDROPONICS

Directions: Answer each one of the questions with complete descriptive statements.

1) Describe the effects that fertilization and irrigation has had on farmland.

2) Describe the pros and cons of using the monoculture system of farming.

3) Describe the positive and negative effects of using pesticides and other agricultural chemicals such as herbicides and defoliants.

4) Describe how the hydroponic system of farming helps our environment.

5) Describe how plants grow in a hydroponic farm.

6) Describe the advantages of using an aquaculture system as a part of a hydroponic farm.

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will use their knowledge to summarize different types of air quality problems.

AIR QUALITY

Directions: Define the following terms, and write a brief summary that explains the importance of having cleaner air on earth.

Environmental Protection Agency-

Clean Air Act-

Carbon Dioxide- (define as a pollutant)

Sulfur Oxides- (define as a pollutant)

Nitrogen Oxides- (define as a pollutant)

Carbon Monoxide- (define as a pollutant)

Ozone-

Total Suspended Particulate (a.k.a. TSP's)-

Pollutant Standards Index-

Ambient Air Quality-

Indoor Air Quality-

National Acid Precipitation Assessment Program-

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will understand the importance of the earth's rain forests.

RAIN FORESTS

Directions: Using textbooks or internet related resources research the importance of rain forests then read the following summation of rain forests and write a paragraph which voices what you think should be done to protect them.

Rain Forest Summation:

It has been said that the tropical rain forests represent the planet's "biological warehouse" where the diversity of plant and animal life found within a single acre plot is simply staggering. The complete destruction of these rain forests would result in losing 80% of the world's vegetation, which produces much needed oxygen, and up to 4 million varieties of life forms.

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will use their knowledge hazardous waste and health issues concerning this waste to write a letter to the editor that voices their concern of this issue and offers and alternative plan to handle this waste.

HAZARDOUS WASTE

Directions: Research the different types of hazardous waste, health issues concerning the dumping of hazardous waste, and environmental concerns dealing with hazardous waste. From this research write a letter to the editor of your local newspaper that voices your concerns of hazardous waste and that offers an alternative solution of how hazardous waste should be handled in the future.

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will understand the importance of cleaning wastewater.

WASTEWATER TREATMENT

Directions: Research and define the following terms. Each of these can be found at your local wastewater treatment facility. Using the following terms draw a diagram of a wastewater treatment facility. Make sure to label each part and explain the treatment process. At the bottom of the diagram explain in your own words what is meant by the following statement: "We should try to keep the water clean because the water that we have on earth is all that we will ever have."

Raw Sewage-

Primary sedimentation tank-

Chlorinator-

Air pump-

Sludge-

Secondary sedimentation tank-

Sludge digester-

Aeration tank-

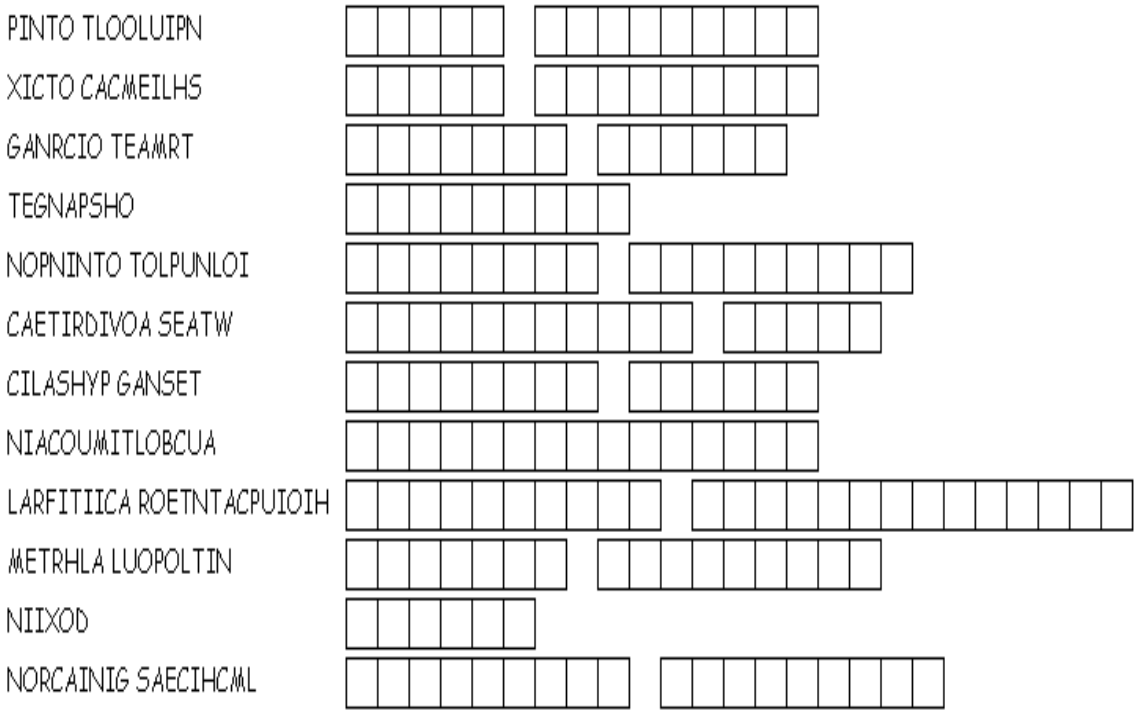
ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will understand the different types of water pollution and environmental problems caused by these pollutants.

WATER POLLUTANTS

Directions: Unscramble then define the following terms.



ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will understand terms associated with agricultural and soil conservation.

AGRICULTURE AND SOIL

Directions: Unscramble and define the following terms. Once complete, answer the discussion questions below the scrambled words.

ROGNAYMO

RIELEFT SIOL

TOSPILO

RALBAE NALD

LUSSOBI

ROBCEDK

NSIEROO

IOTEDFASRTINCEI

LILTON MARNIGF

ONSIZATNIALI

UARULQATUEC

Why is the amount of arable land steadily decreasing each year?

Explain where and how most soil is formed?

Explain how no-till farming helps to decrease the amount of erosion that takes place?

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon the completion of this activity students will understand terms associated with agricultural and soil conservation.

ENVIRONMENTAL CAREERS

Directions: Research four of the listed careers and write a summation of each. The summary should include things such as education needed for this career, a description of the duties of the job, and how the job helps the environment.

1) Environmental Filmmaker
2) Research Wildlife Biologist
3) Landfill Manager
4) Fish and Wildlife Trooper
5) Environmental Lawyer
6) Climate Researcher
7) Environmental Educator
8) Water Treatment Manager

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: The student will use the Occupational Outlook Handbook on the internet to research and explore an environmental career.

OCCUPATIONAL OUTLOOK HANDBOOK

Directions: Using your WEB browser, type in the address for the Occupational Outlook Handbook (http://stats.bls.gov/ocohome.htm) If this address does not work, use a search engine to locate the current address. Use the handbook to research information on an environmental career. Select one career and summarize your findings in a two-page report. The report should include information on the following:

1. Nature of the work
2. Working conditions
3. Employment
4. Training and Qualifications
5. Job outlook
6. Earnings
7. Related Occupations

ENVIRONMENTAL BIOTECHNOLOGY

Name:_____

Learning Objective: Upon completion of this activity, students will understand the environmental concerns of nuclear power plants

NUCLEAR POWER VERSUS THE ENVIRONMENT

Directions: Using the internet research nuclear power and its affects on the environment (i.e. nuclear waste) then answer each of the short answer questions.

1) What are the advantages of using nuclear energy

2) How expensive is nuclear energy?

3) What are two reasons that more nuclear power plants aren't being constructed?

4) Explain what happened to the Chernobyl nuclear power plant.

5) Explain why people continued to die from this explosion long after the blast?

6) Explain what happened as a result of the Three Mile Island nuclear power plant incident?

7) Approximately, how much longer will our supply of ^{235} Uranium last?

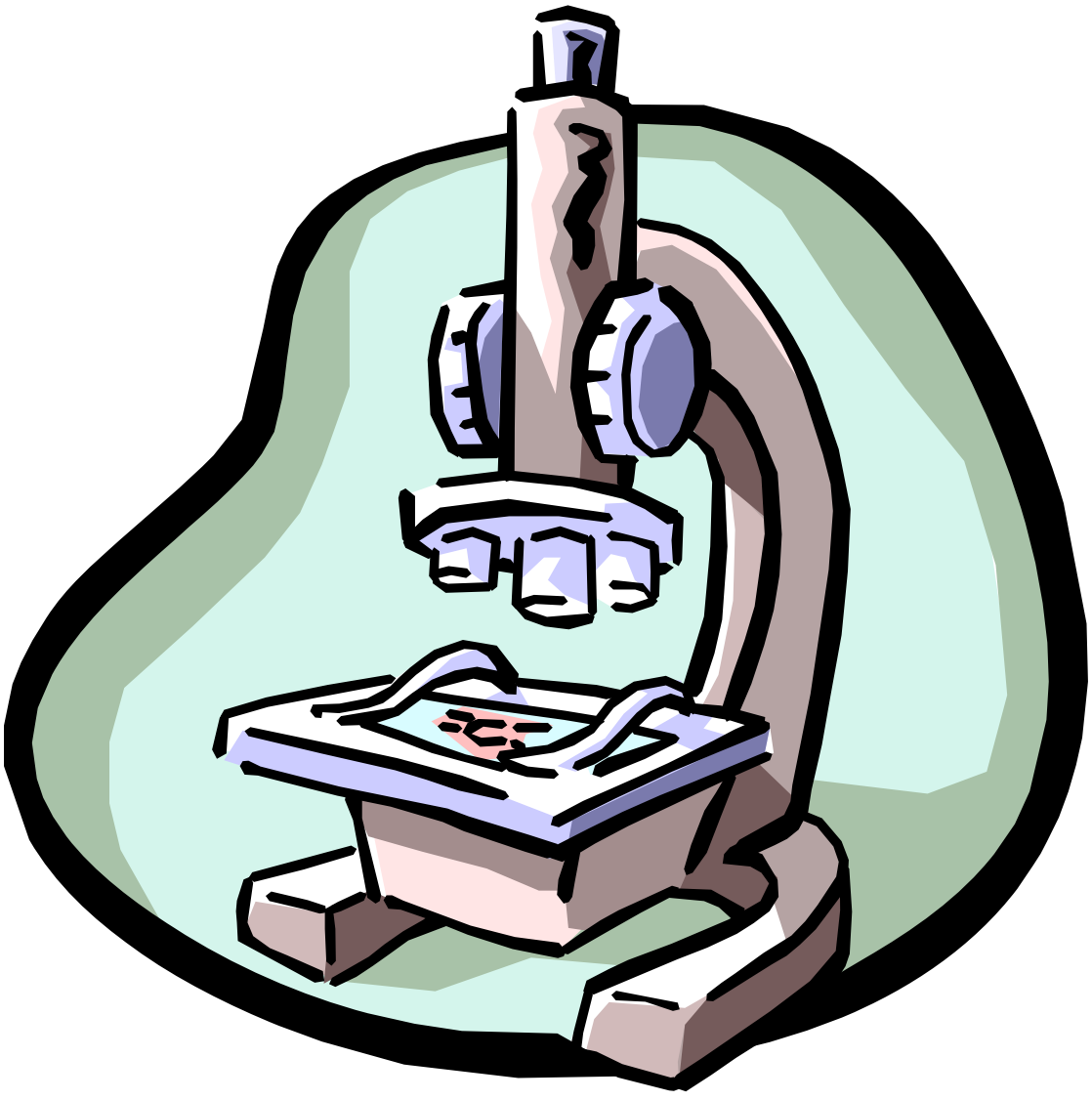
8) What is the energy equivalent of on uranium fuel pellet?

9) What do nuclear power plants do with their radioactive waste?

10) How is this radioactive waste developed in a nuclear power plant?

11) What do you think could be done to solve the problem radioactive waste?

MEDICAL



MEDICAL

Upon completion of the activities in this unit, the students will:

- -be able to demonstrate writing competency in the medical area.
- -gain insight to career opportunities in medicine by researching various topics.
- -have a better understanding and appreciation of medical technology.
- -possess increased knowledge concerning how medical technology is used to produce products and services that meet society's needs.

MEDICAL

Name_____

Learning Objective: Upon completing this activity the student will be able to classify job descriptions using complete sentences based on the level of training required.

Careers in Medicine

Directions: Listed below are four job classifications related to the area of medicine. Using complete sentences, write a brief description of each job classification. Include the following in each description.

A. Definition of the classification
B. Training for each classification
C. On-the-job for workers in each class
D. An example of a job

1. Semiskilled
2. Skilled
3. Technical
4. Professional

MEDICAL

Name_____

Learning Objectives: Upon completing this activity the student will be able to write three paragraphs using specific terms to create the topic sentence.

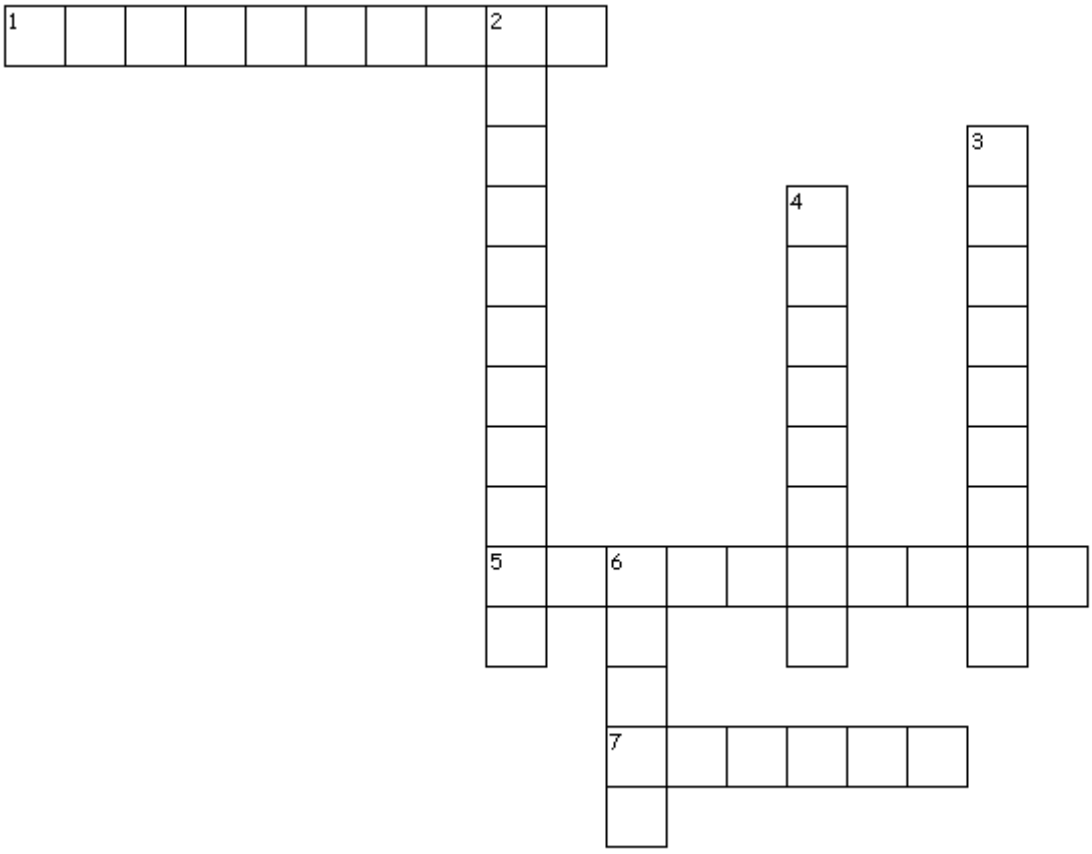
Topic Sentence Formation

Directions: There are three main subjects. Each main topic has three subtopics. Use the bold print topic to create the topic sentence in each of three paragraphs. You are to write a paragraph for each of the main topics and use all three of the subtopics in each paragraph respectively.

REHABILITATION	THERAPY	HEALTH
Medical	**Radiation**	Enzymes
Condition	***Reduce***	***Human***
Disease	Possibilities	**Proteins**

MEDICAL

Name_____



Across

1. skilled person
5. clean up
8. conversation

Down

2. helps your hearing
3. healer
4. same as operating
6. helps the doctor

MEDICAL
Name_____

Learning Objective: Upon completing this activity the student will be able to write a business letter inquiring about the specifics of a field trip.

Field Trip Business Letter

Directions: Write a letter of inquiry concerning a field trip using a business letter format using the following criteria:

A. Opening Paragraph – Introduce yourself by telling the personnel administrator who you are, your grade, where you are from, what school you attend, etc.

B. Second Paragraph – State why you and your class would like to tour the site. Include a brief statement of what your class is studying.

C. Third Paragraph – Ask for a response to your request. Also ask for a choice of available dates. Be sure to thank the administrator for his/her response.

MEDICAL

Name_____

Learning Objective: Upon completing this activity the student will be able to combine sentence fragments in order to form complete sentences.

Combining Sentence Fragments

Directions: Combine the sentence fragments in groups A and B to write complete sentences.

Group A

1. Design and testing involves
2. Industry is responsible for
3. Governments are responsible for
4. In many parts of the world
5. This is a good way to insure

Group B

1. meeting public needs.
2. laws are non existent.
3. a healthy lifestyle.
4. the development of bio-related products.
5. setting guidelines and rules for testing.

MEDICAL

Name_____

Learning Objective: Upon completing this activity the student will be able to list the skills, background and other desirable experiences that can contribute to becoming a successful doctor.

Job Application Worksheet: Medical Doctor

Directions: Complete the following worksheet as though you were applying for a position as a physician with a major hospital. Use your imagination!

Education

1. _____
   _____
2. _____
   _____
3. _____
   _____
4. _____
   _____
5. _____
   _____
6. _____
   _____

Work Experience

1. _____
   _____
2. _____
   _____
3. _____
   _____
4. _____
   _____
5. _____

Hobbies and Other Experiences

1. _____
   _____
2. _____
   _____
3. _____

MEDICAL

Name_____

Learning Objectives: Upon completing this activity the student will be able to write a letter to a government official explaining his/her views on a current health care issue.

Letter to the Surgeon General

Directions: Write a letter to the U.S. Surgeon General telling him your views on a current health care related issue. You should be able to elaborate on three to five main points. Use a standard business format.

MEDICAL

Name_____

Learning Objective: Upon completing this activity the student will be able to name several medical tools used in the following medical professions.

Medical Tools

Directions: Use **complete sentences** to list and briefly describe three tools used in each of the profession professions listed below:

Dentist

1. _____
   _____
2. _____
   _____
3. _____
   _____

Sanitarian

1. _____
   _____
   _____
2. _____
   _____
3. _____

Nurse

1. _____
   _____
2. _____
   _____
3. _____
   _____

MEDICAL

Name_____

Learning Objective: Upon completion of this activity the student will be able to write a brief summary explaining the difference between the following health care related professions.

Mental Health vs. Environmental Health

Directions: Write a brief summary of one topic each found under the heading of mental health and environmental health respectively.

Mental Health

- Prevention of mental disorders
- Consultations to community organizations
- Diagnosis services
- Treatment services

Environmental Health

*Food protection
*Protection against hazardous substances
*Water-pollution control
*Solid-waste control

MEDICAL
Name _____

Learning Objective: Upon completing this activity the student will be able to write a news article related to health care.

News Article

Directions: You are to write a news article on health care 1 – 2 pages in length. Use soft-ware such as Microsoft Word 2000, Pagemaker, etc., to make use of graphics and newspaper format.

MEDICAL

Name_____

Learning Objectives: Upon completing this activity the student will be able to write a paragraph using an introductory sentence fragment.

Paragraph Completion

Directions: Complete two paragraphs using the sentence fragments provided.

(1) The protein acts_____

(2) Because of their ability to destroy tumor cells _____

MEDICAL

Name_____

Learning Objectives: Upon completing this activity the student will be able to write a brief essay researching historically related health care topics.

Then and Now

Directions: Write an essay on one of the following:

1. Comparing dental care now with dental care in the 1900's.
2. Comparing dieting trends/fads now versus 1960-1980.
3. Comparing hair care for women now versus 1960-1980.
4. Comparing sports energy foods/supplements now versus 1960-1980.
5. Comparing skin care/personal hygiene now versus prior to the 1900's.

MEDICAL
Name _____

Learning Objective: Upon completing this activity you will be able to write complete sentences by arranging the words so that they become complete sentences.

Unscrambling Words: Making complete sentences.

Directions: Unscramble the following words and make complete sentences.

1. is bandage an type ace of
2. entire the body covers skin
3. from made chemicals things are many
4. can well very people some hear.
5. made calcium of are bones
6. doctors all are physicians dentist psychologist and
7. weight some lose we can how
8. air sacks small contain lungs
9. as the midsection to referred often is stomach the
10. see well not do them of some

MEDICAL
Name _____

Medical

W N K Z X B W V C J J D Z C R
R O I N S P E C T O R N H U O
Q I B A Z F A J N H A E F O Z
J T P Q M I D G J I M W D P O
R A G H H K K O R I D T V T Y
B T B A Y L U A S Q H Z G I I
H I V K R S T T Y E U U B C S
T L E C T I I D L W M A P I F
F I S S N A J C Q D B Z A A P
E B Z A R W N H I M H R R N X
H A S E W U N J O A B C M C J
X H C G Z X N S T T N E K K W
Q E R Q Z A U Z I A W W L S V
T R H T L A E H S N C L M T T
R L D A Y Y D T N W S O X O E

CHEMIST
HEALTH
INSPECTOR
NURSE
OPTICIAN
PHYSICIAN
REHABILITATION
SANITARIAN

MEDICAL

Name_____

Learning Objectives: Upon completing this activity the student will be able to write a brief paragraph using a specific combination of terms.

Writing Using Specific Terms

Directions: Write a brief paragraph using the terms below:

Physician
Surgical technician
Physical therapist
Hospital administrator
Nurse

MEDICAL
Name _____

Learning Objectives: Upon completing this activity you will be able to demonstrate the ability to research a career in the medical field.

Career Research Activity

Directions: Use the following format to write three brief paragraphs on one of the topics below:

*communicable disease control
*rehabilitation services
*family health services
*dental health services
*substance-abuse services

MEDICAL

Name_____

Learning Objective: Upon completion of this activity the student will be able to un scramble the following word puzzles in order to identify key health care related terms.

Unscramble the Terms

Directions: Unscramble the following terms:

1. goloiduatsi
2. mechtsi
3. sitciteneg
4. citponai
5. cisyhnaip
6. ehtsorpcit
7. golohtatsip
8. cinnhcetnai
9. parehttsi
10. ratinasnai

MEDICAL
Name _____

Learning Objective: Upon completing this task the student will be able to describe the function of each department in a hospital or health maintenance organization (HMO).

Hospital/HMO Organizational Chart

Directions: You are to make an organizational chart of a hospital or HMO. Using complete sentences you will briefly describe the function of each department.

MEDICAL
Name _____

Learning Objectives: Upon completing this activity the student will be able to develop a list of safety tips using complete sentences.

Safety Tips

Directions: Develop a list of ten safety tips in two of the following areas using complete sentences:

(1) Working in an operating room.
(2) Removing hazardous materials.
(3) Moving an injured person to safety.
(4) Driving an emergency vehicle.

Appendix

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www.discovery.com 2001 discovery home Page
www.education.nasa.gov 2001NASA Education Program
http://www.galileo.peachnet.edu/ Georgia Library Learning Online GALILEO home page 2001
http://www.mla.org/
http://www.apastyle.org/elecref.html
http://www.english.uiuc.edu/cws/wworkshop/bibliography/mla/mlamenu.htm
http://webster.commnet.edu/apa/apa_index.htm
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http://owl.english.purdue.edu/handouts/research/r_apa.html

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