

Student Name \_\_\_\_\_

Form REL

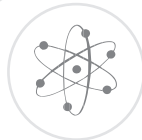
# Georgia



End-



Of-



Course



Tests

Mathematics II  
Geometry/Algebra II/Statistics  
Released Items



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## Mathematics II Formula Sheet

Below are the formulas you may find useful as you work the problems. However, some of the formulas may not be used. You may refer to this page as you take the test.

### Area

Rectangle/Parallelogram  $A = bh$

Triangle  $A = \frac{1}{2}bh$

Circle  $A = \pi r^2$

### Circumference

$C = \pi d$   $\pi \approx 3.14$

### Volume

Rectangular Prism/Cylinder  $V = Bh$

Pyramid/Cone  $V = \frac{1}{3}Bh$

Sphere  $V = \frac{4}{3}\pi r^3$

### Surface Area

Rectangular Prism  $SA = 2lw + 2wh + 2lh$

Cylinder  $SA = 2\pi r^2 + 2\pi rh$

Sphere  $SA = 4\pi r^2$

### Trigonometric Relationships

$\sin(\theta) = \frac{\text{opp}}{\text{hyp}}$ ;  $\cos(\theta) = \frac{\text{adj}}{\text{hyp}}$ ;  $\tan(\theta) = \frac{\text{opp}}{\text{adj}}$

### Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Standard Form  $ax^2 + bx + c = y$

Vertex Form  $a(x - h)^2 + k = y$

### Mean Absolute Deviation

$$\frac{\sum_{i=1}^N |x_i - \bar{x}|}{N}$$

the average of the absolute deviations from the mean for a set of data

### Population Standard Deviation

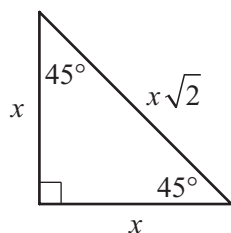
$$\sigma = \sqrt{\frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N}}$$

### Sample Standard Deviation

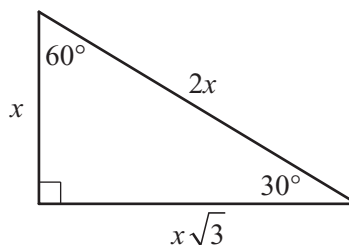
$$S = \sqrt{\frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N - 1}}$$

### Special Right Triangles

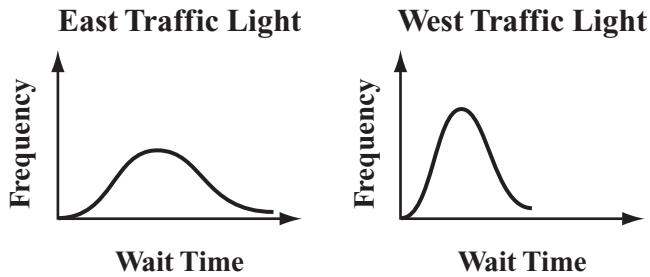
45°–45°–90° Triangle



30°–60°–90° Triangle



1 The curves in these graphs represent the distribution of wait times for two traffic lights.



Which statement best describes the range and the standard deviation of the wait times at each traffic light?

- A The east traffic light has both a greater range and a greater standard deviation.
- B The west traffic light has both a greater range and a greater standard deviation.
- C The east traffic light has a greater range, and the west traffic light has a greater standard deviation.
- D The west traffic light has a greater range, and the east traffic light has a greater standard deviation.

GM2073012\_1

2 At Eastview Pizza, orders for delivered pizza are free if the pizza is delivered more than 45 minutes after it is ordered. It always takes 15 minutes to prepare a pizza at this restaurant. This table shows statistics on the delivery times for two drivers.

Pizza Delivery Driver Statistics

Driver	Mean Delivery Time	Standard Deviation
Ben	12 minutes	10 minutes
Jim	15 minutes	6 minutes

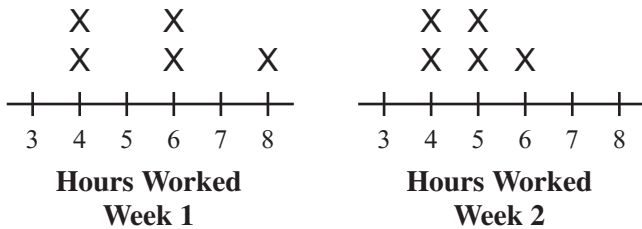
Which conclusion can be made from the data?

- A Orders for delivered pizzas are free more often when Ben is the driver.
- B Orders for delivered pizzas are free more often when Jim is the driver.
- C Orders for delivered pizzas are never free when either Ben or Jim is the driver.
- D Orders for delivered pizzas are free equally often when either Ben or Jim is the driver.

GM2073015\_1

## MATHEMATICS II – SECTION I

- 3** These line plots show the number of hours Theodore worked each day for the past two weeks.



Which conclusion can be made from the line plots?

- A Both the mean and the standard deviation for Week 1 are greater than for Week 2.
- B Both the mean and the standard deviation for Week 2 are greater than for Week 1.
- C The mean for Week 1 is greater, but the standard deviation for Week 2 is greater.
- D The mean for Week 2 is greater, but the standard deviation for Week 1 is greater.

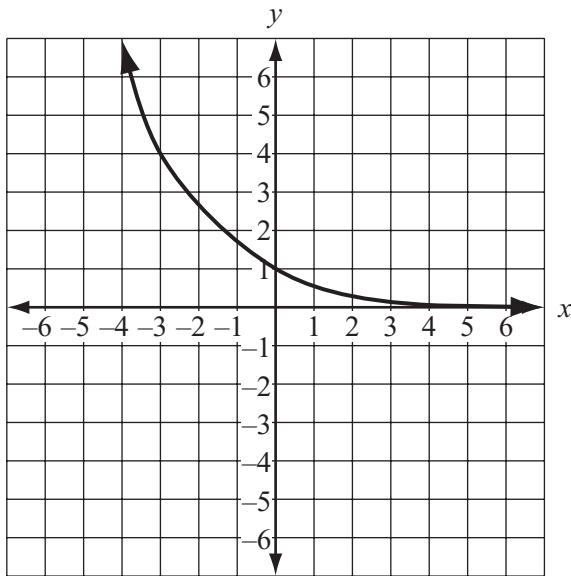
[GM2073019\\_1](#)

- 4** An English teacher determined that there is a positive linear relationship between students' scores on an essay test and the length of time students take to complete the test. Based on this information, which conclusion is valid?

- A The student with the highest score on the essay test took the longest to complete the test.
- B A student who takes more time to complete the essay test will have a higher score than a student who takes less time to complete the test.
- C Students with lower scores on the essay test tend to have taken shorter times to complete the test.
- D Students with higher scores on the essay test tend to have taken shorter times to complete the test.

[GM2074125\\_3](#)

5 The function  $f(x)$  is graphed on this coordinate grid.



What are the domain and the range of the function  $f^{-1}(x)$ ?

- A Both the domain and the range are the set of all real numbers.
- B Both the domain and the range are the set of all positive real numbers.
- C The domain is the set of all real numbers and the range is the set of all positive real numbers.
- D The domain is the set of all positive real numbers and the range is the set of all real numbers.

GM2075058\_4

6 This function models the height,  $f(x)$ , in feet, of an object  $x$  seconds after it is tossed into the air.

$$f(x) = -16x^2 + 48x + 64$$

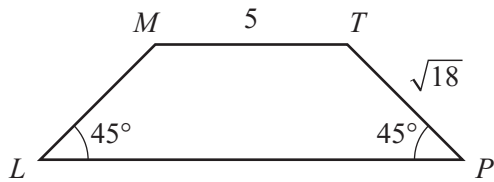
Which statement describes the object 1.5 seconds after it is tossed into the air?

- A The object is on the ground.
- B The object is moving upward.
- C The object is at its highest point.
- D The object is moving downward.

GM2075048\_3

MATHEMATICS II – SECTION I

7 Quadrilateral  $LMTP$  is an isosceles trapezoid.



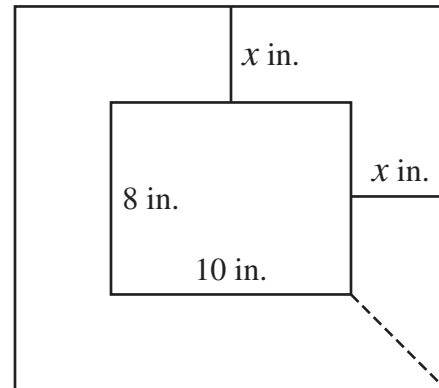
What is the length of  $\overline{LP}$ ?

- A 10
- B 11
- C  $5 + 2\sqrt{18}$
- D  $5 + 6\sqrt{2}$

GM2076066\_2

Use this information to answer question 8.

A picture has a length of 10 inches and a width of 8 inches. Marcus will build a frame for the picture. The frame will be  $x$  inches wide as shown in this diagram.



GM20710

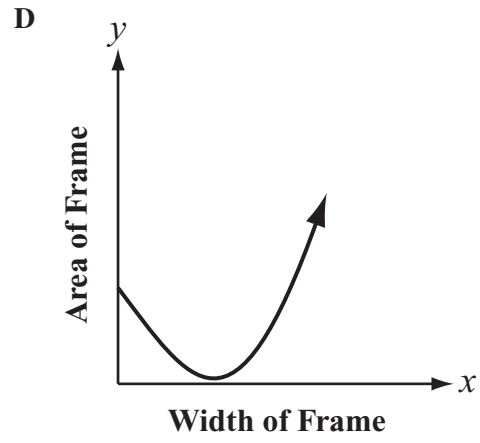
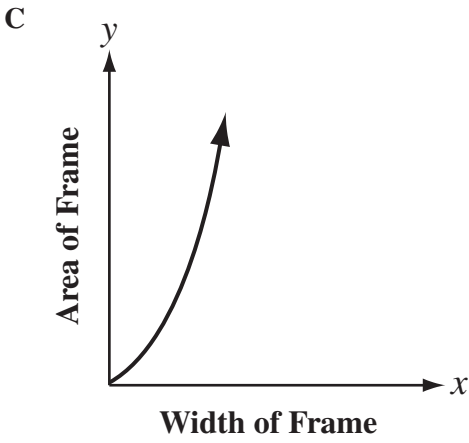
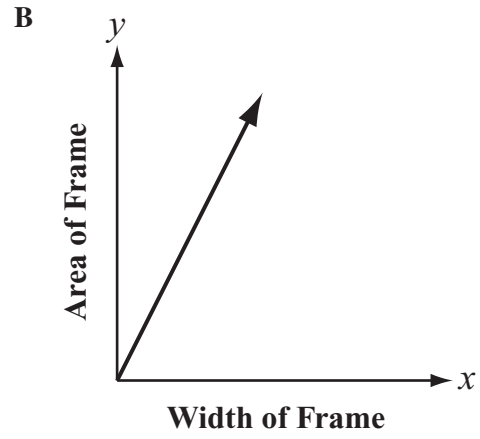
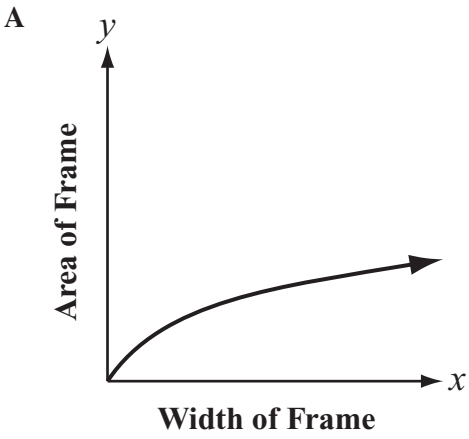
8 Marcus increases the dimensions of the picture by a scale factor of  $k$ . He then builds a new frame with the same width  $x$ . Which expression represents the increase in the area, in square inches, of the new frame?

- A  $36kx$
- B  $36x(k - 1)$
- C  $80k^2x$
- D  $80x^2(4k^2 - 1)$

GM2073105.0710\_2

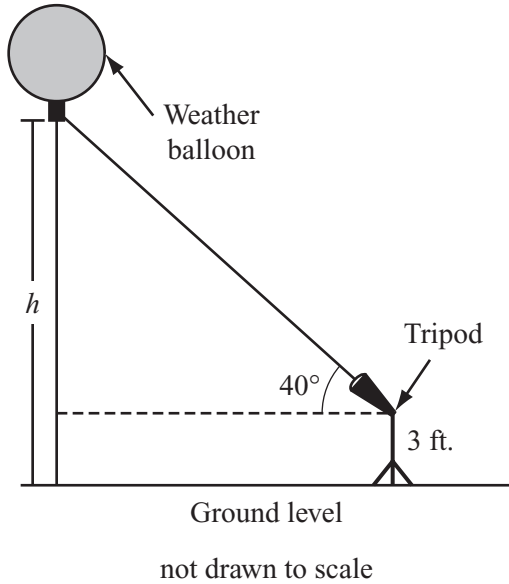
MATHEMATICS II – SECTION I

9 Which graph could model the relationship between the area,  $y$ , in square inches, of the frame alone and the width of the frame,  $x$ , in inches?



GM2073101.0710\_3

- 10 Bianca uses an angle-measuring device on a 3-foot tripod to find the height,  $h$ , of a weather balloon above ground level, as shown in this diagram.



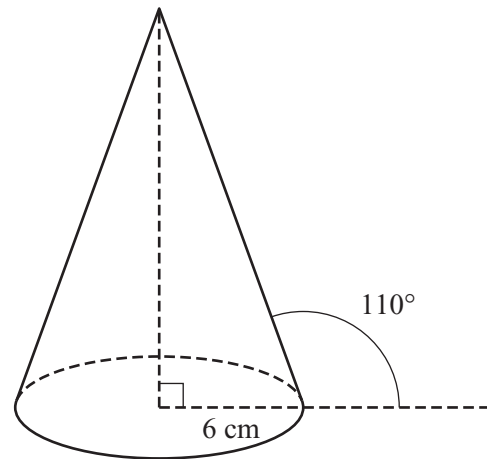
The balloon is at a  $40^\circ$  angle of elevation. A radio signal from the balloon tells Bianca that the distance between the tripod and the balloon is 25,000 feet.

Which expression represents the height,  $h$ , of the balloon above ground level?

- A  $25,000 \cdot \sin 40^\circ - 3$
- B  $25,000 \cdot \sin 40^\circ + 3$
- C  $\frac{25,000}{\sin 40^\circ} - 3$
- D  $\frac{25,000}{\sin 40^\circ} + 3$

GM2076086\_2

- 11 Use this diagram of a cone to answer the question.



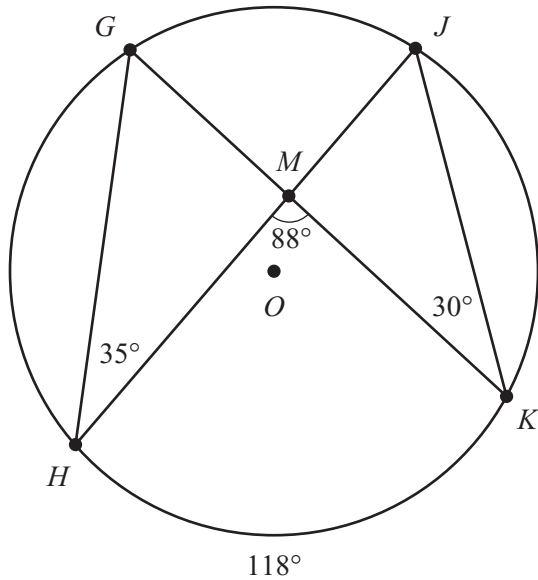
The base of the cone has a radius of 6 cm. Which expression represents the slant height, in centimeters, of the cone?

- A  $6 \cos 70^\circ$
- B  $6 \cos 110^\circ$
- C  $\frac{6}{\cos 70^\circ}$
- D  $\frac{6}{\cos 110^\circ}$

GM2076087\_3



12 Use this diagram to answer the question.



What is wrong with the information given in the diagram?

- A  $\overline{HJ}$  should pass through the center of the circle.
- B The length of  $\overline{GH}$  should be equal to the length of  $\overline{JK}$ .
- C The measure of  $\angle GHM$  should be equal to the measure of  $\angle JKM$ .
- D The measure of  $\angle HMK$  should be equal to half the measure of  $\widehat{HK}$ .

GM2076109\_3

13 The ratio of the surface area of Pluto to the surface area of Mercury is approximately 1 to 4. Assuming the planets are roughly spherical, what is the ratio of the volume of Pluto to the volume of Mercury?

- A 1 to 4
- B 1 to 8
- C 1 to 16
- D 1 to 64

GM2076123\_2

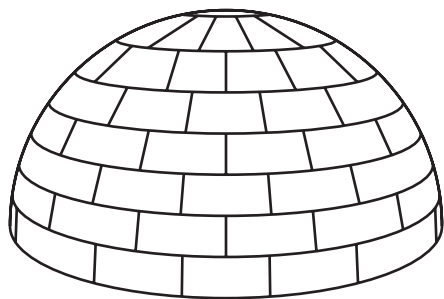
14 The radius of a blue marble is  $\frac{3}{4}$  the radius of a red marble. The volume of the red marble is  $32\pi$  cubic centimeters. Assuming both marbles are spherical, what is the volume, in cubic centimeters, of the blue marble?

- A  $\frac{27}{2}\pi$
- B  $\frac{32}{3}\pi$
- C  $18\pi$
- D  $24\pi$

GM2076127\_1

Use this information to answer question 15.

An igloo is a shelter constructed from blocks of ice in the shape of a hemisphere. This igloo has an entrance below ground level.



The outside diameter of the igloo is 12 feet. The thickness of each block of ice that was used to construct the igloo is 1.5 feet.

GM20708

**15** What happens to the outside radius of the igloo if the outside surface area of the igloo is multiplied by  $\frac{1}{4}$ ?

- A The outside radius is multiplied by  $\frac{1}{64}$ .
- B The outside radius is multiplied by  $\frac{1}{16}$ .
- C The outside radius is multiplied by  $\frac{1}{4}$ .
- D The outside radius is multiplied by  $\frac{1}{2}$ .

GM2072083.0708\_4



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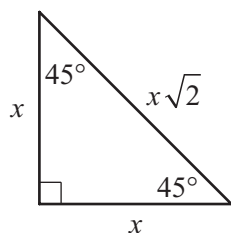
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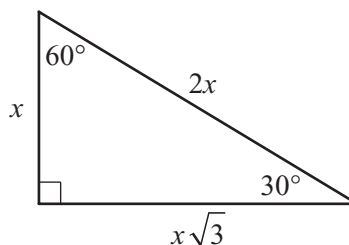
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