



Section 2, Module 2: Math

14

In the xy -plane, lines k and j are perpendicular and intersect at the point $(4, 23)$. Line j passes through the origin, and line k passes through the point $(p, 0)$, where p is a constant. What is the value of p ?

- ☐ A) -128.25
- ☐ B) -127.75
- ☐ C) 135.75
- ☒ D) 136.25



Section 2, Module 2: Math

Student-produced response directions

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- Don't enter **symbols** such as a percent sign, comma, or dollar sign.

Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	3.5 3.50 7/2	$31/2$ $3\ 1/2$
$\frac{2}{3}$	$2/3$.6666 .6667 0.666 0.667	0.66 .66 0.67 .67
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12

A researcher surveyed undergraduate students, graduate students, and postdoctoral students. The number of undergraduate students surveyed was 6,950% of the number of postdoctoral students surveyed and the number of graduate students surveyed was 32% of the number of undergraduate students surveyed. If there were 4,448 graduate students surveyed, what was the sum of the number of undergraduate students and postdoctoral students surveyed?

1|

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11

During the first 8.00 seconds after a car started moving, its speed increased to 11.0 meters per second. From 8.00 seconds to 14.0 seconds after the car started moving, its speed increased from 11.0 meters per second to 23.0 meters per second. To the nearest hundredth, what is the positive difference between the average rate of change of the speed of the car, in meters per second per second, during the first 8.00 seconds after the car started moving and the average rate of change of the speed of the car, in meters per second per second, from 8.00 seconds to 14.0 seconds after the car started moving?



Section 2, Module 1: Math

13

$$f(x) = 4x^2 + 56x + 197$$

The function g is defined by $g(x) = f(x + 6)$. What is the minimum value of $g(x)$?

- ☐ A) -13
- ☒ B) -7
- ☐ C) 1
- ☐ D) 7



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19

$$12(w - a)(w + 8) = 4(w + 8)$$

In the given equation, a is a constant. The sum of the solutions to the equation is $\frac{34}{3}$. What is the value of a ?

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	0.666	.67
	0.667	
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	-.3333	-0.33
	-0.333	

16

$$(x - k)^2 = (k - 4a)(x - k)$$

In the given equation, a and k are constants, where $k > 4a$. The sum of the solutions to the equation is $3k + 37$. What is the value of a ?

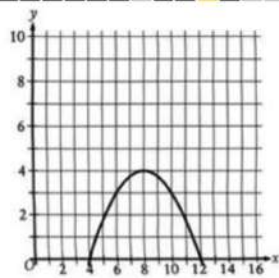
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21



An equation of the graph shown is $y = -\frac{1}{4}(x - p)^2 + 4$, where p is an integer constant. What is the value of p ?

8

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	-0.333	

20

Right rectangular prism X is similar to right rectangular prism Y. The surface area of right rectangular prism X is 58 square centimeters (cm^2) and the surface area of right rectangular prism Y is $1,450\ cm^2$. The volume of right rectangular prism Y is 1,500 cubic centimeters (cm^3). What is the sum of the volumes, in cm^3 , of right rectangular prism X and right rectangular prism Y?

12



Section 2, Module 2: Math

5

The function f is defined by the equation $f(x) = 5|x - 4| - 25$. What is the value of $f(-4)$?

- ☐ A) -65
- ☐ B) -25
- ☐ C) 15
- ☐ D) 65

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22

	Volume (cubic units)
Right circular cylinder A	32π
Right circular cylinder B	864π

The table shows the volume of two similar solids, right circular cylinder A and right circular cylinder B. The radius of right circular cylinder A is 2 units. The surface area of right circular cylinder A is $k\pi$ square units, and the surface area of right circular cylinder B is $n\pi$ square units, where k and n are constants. What is the value of $n - k$? (The surface area of a right circular cylinder with radius r and height h is

$$2\pi r^2 + 2\pi rh.)$$



Section 2, Module 2: Math

6

$$f(x) = 50x + 8$$

The given function f estimates the distance a train has traveled, in kilometers, from a station in a certain city x hours after crossing the city border. What is the best interpretation of 8 in this context?

- ☐ A) Between the station and the city border, the train traveled an estimated total distance of 8 kilometers.
- ☐ B) After crossing the city border, the train traveled at an estimated speed of 8 kilometers per hour.
- ☐ C) After crossing the city border, the train traveled an estimated total distance of 8 kilometers.
- ☐ D) Between the station and the city border, the train traveled at an estimated speed of 8 kilometers per hour.

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8

x	$f(x)$
-39	8
-7	0
33	10

The table shows three values of x and their corresponding values of $f(x)$, where $f(x) = \frac{kx + 63}{x + 3}$ and k is a constant. What is the value of k ?

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