

Section 2, Module 1: Math

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The function g is defined by $g(x) = -\frac{x}{3} + 11$. What is the x -intercept of the graph of $y = g(x) + 6$ in the xy -plane?

- ☐ A) $(-33,0)$
- ☐ B) $(-51,0)$
- ☒ C) $(33,0)$
- ☐ D) $(51,0)$

$$\begin{aligned}ax + by &= 96 \\ 2ax + 8y &= 72\end{aligned}$$

In the given system of equations, a and b are constants. The graphs of these equations in the xy -plane intersect at the point $(x, 6)$. What is the value of b ?

- ☐ A) 4
- ☐ B) 6
- ☐ C) 8
- ☐ D) 14

If the perimeter of an equilateral triangle with a height of 21 is $a\sqrt{3}$, what is the value of a ?

An object's speed is increasing at a rate of 10.5 meters per second squared, What is this rate, in miles per minute squared, rounded to the nearest tenth? (Use 1 mile = 1,609 meters.)

- ☐ A) 0.4
- ☒ B) 23.5
- ☐ C) 153.2
- ☐ D) 281.6

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A rectangular poster has an area of 360 square inches. A copy of the poster is made in which the length and width of the original poster are each increased by 40%. What is the area of the copy, in square inches?

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The function f is defined by $f(x) = 41(0.28)^x$. For any positive integer n , the value of $f(n)$ is $p\%$ less than the value of $f(n-1)$. What is the value of p ?

- ☐ A) 72
- ☐ B) 59
- ☐ C) 41
- ☐ D) 28

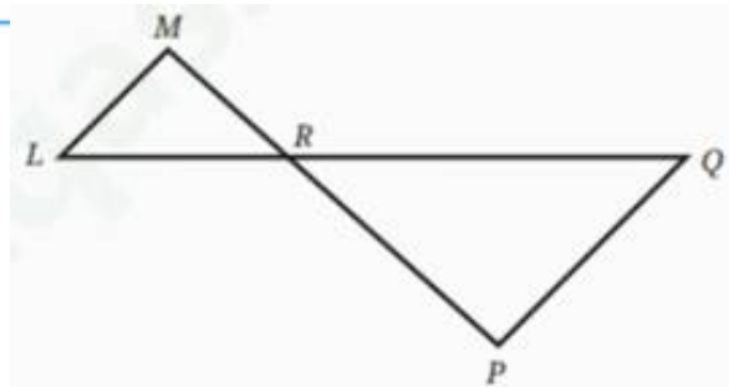
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$$5x = 75y - 125$$

One of the two equations in a system of linear equations is given. The system has no solution. Which equation could be the second equation in this system?

- ☐ A) $x = 3y$
- ☒ B) $\frac{1}{5}x = 3y$
- ☐ C) $x = 15y - 25$
- ☐ D) $\frac{1}{5}x = 15y - 25$



Note: Figure not drawn to scale.

In the figure, $\overline{LQ}$ intersects $\overline{MP}$ at point R , and $\overline{LM}$ is parallel to $\overline{PQ}$. The lengths of $\overline{MR}$ and $\overline{RP}$ are 9 and 17 units, respectively. The area of $\triangle LMR$ is 45 square units. What is the area of $\triangle PQR$, in square units?

☐ A) $\frac{3,645}{289}$

☐ B) $\frac{405}{17}$

☒ C) 85

☐ D) $\frac{1,445}{9}$

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Function f is a quadratic function. The graph of $y = f(x)$ in the xy -plane has a vertex at $(9, -7)$, contains the point $(8, -9)$, and has a y -intercept at $(0, a)$. The graph of $y = 6 \cdot f(x)$ has a y -intercept at $(0, b)$. What is the positive difference between a and b ?

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