Bellwork Alg 2 Wednesday, December 12, 2018

1. In the $xy-plane$, the line l contains the points $(2,6)$ and $(8,10)$. Which of the following is an equation of line l?

A) $y=\frac{2}{3}x+\frac{14}{3}$ B) $y=\frac{3}{2}x-2$ C) $y=2x+6$ D) $y=8x+10$

2. If $x \neq 0$, which of the following expressions is equivalent to $\frac{\sqrt{16x^4y^8}}{x^3}$?

A) $8x^2y^4$ B) $4xy^4$ C) $4x^{-2}y^2$ D) $4x^{-1}y^4$

3. If $2y=x+40$ and $3x=y+20$, what is the value of $x+y$?

A) 28 B) 34 C) 38 D) 44

4. The table below shows the distribution of US states according to whether they have a state-level sales tax and a state-level income tax.

2013 State Level Taxes

	State sales tax	No state sales tax
State income tax	39	4
No state income tax	6	1

To the nearest tenth of a percent, what percent of states with a state-level sales tax do not have a state-level income tax?

A) 6.0% B) 12.0% C) 13.3% D) 14.0%

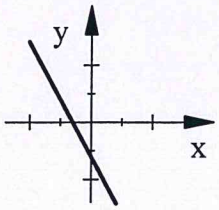
5. $x + y = 17$

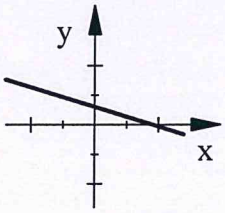
$xy = 72$

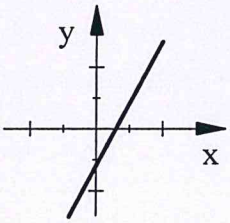
If one solution to the above system of equations is (x,y), what is one possible value of x ?

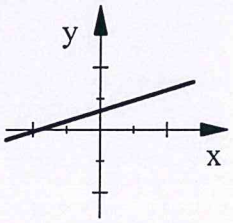
6. $Ax + By = C$

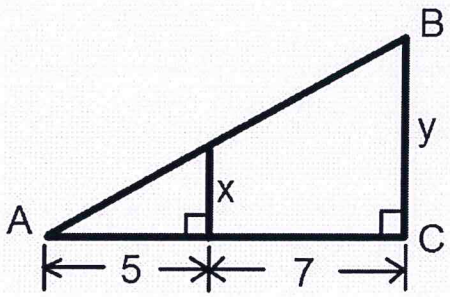
In the equation above, A, B, and C are positive constants. Which of the following could be the graph of the equation in the $xy-plane$?

A) 

B) 

C) 

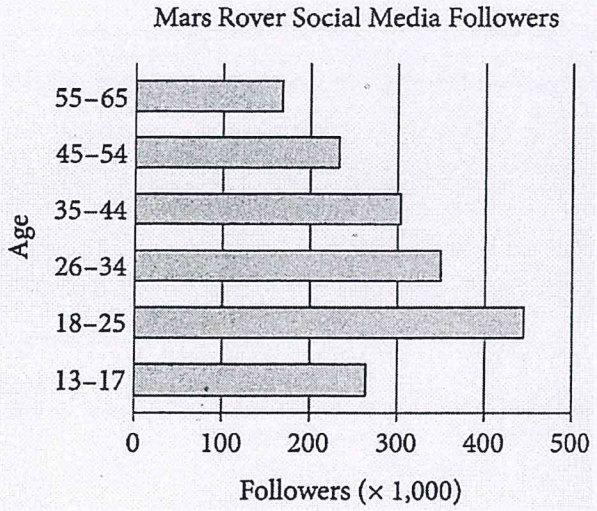
D) 

7. 

Note: Figure not drawn to scale

The area of triangle ABC above is at least 48 but no more than 60. If y is an integer, what is one possible value of x ?

8.



The total number of followers of a Mars rover's social media account is $1,764,000$, as summarized by age in the graph above. Which of the following could be the median age of the followers?

A) 37 B) 29 C) 20 D) 16

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Answers

1. In the $xy-plane$, the line l contains the points $(2,6)$ and $(8,10)$. Which of the following is an equation of line l?

A) $y=\frac{2}{3}x+\frac{14}{3}$ B) $y=\frac{3}{2}x-2$ C) $y=2x+6$ D) $y=8x+10$

1st: find slope

$m=\frac{10-6}{8-2}=\frac{4}{6}=\frac{2}{3}$

The answer must be A because it's the only answer with a slope of $\frac{2}{3}$.

2. If $x\neq 0$, which of the following expressions is equivalent to $\frac{\sqrt{16x^4y^8}}{x^3}$?

A) $8x^2y^4$ B) $4xy^4$ C) $4x^{-2}y^2$ D) $4x^{-1}y^4$

$\frac{\sqrt{16x^4y^8}}{x^3}=\frac{4x^2y^4}{x^3}=\frac{4y^4}{x}\Rightarrow 4x^{-1}y^4$

x in the denominator used to be x^{-1} in the numerator

Answer is D

3. If $2y=x+40$ and $3x=y+20$, what is the value of $x+y$?

A) 28 B) 34 C) 38 D) 44

Answer is D

Solve $2y=x+40$ for x $\longrightarrow$ $x=2y-40$

use Substitution: $3(2y-40)=y+20$

$6y-120=y+20$

$5y=140$

$y=28$

Now find x

$x=2(28)-40$

$x=16$

$x+y=28+16=44$

4. The table below shows the distribution of US states according to whether they have a state-level sales tax and a state-level income tax.

2013 State Level Taxes

	State sales tax	No state sales tax
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To the nearest tenth of a percent, what percent of states with a state-level sales tax do not have a state-level income tax?

A) 6.0% B) 12.0% C) 13.3% D) 14.0%

Answer is C

$\frac{\#\text{ of states w/ state level sales tax, }\#\text{ w/o income tax}}{\#\text{ states that have STATE Level Sales tax}}=\frac{6}{39+6}=13.33\%$

5. $x + y = 17$

$xy = 72$

If one solution to the above system of equations is (x,y), what is one possible value of x ?

solve $x+y=17$ for y $\longrightarrow$ $y = 17-x$

use substitution: $xy = 72$ becomes $x(17-x) = 72$

$17x - x^2 = 72$

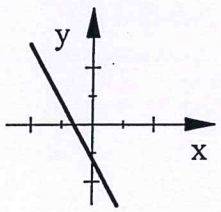
$0 = x^2 - 17x + 72$

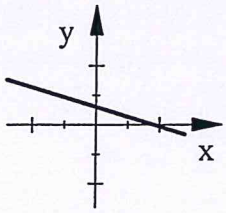
$0 = (x-8)(x-9)$

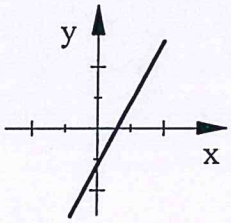
$x = 8, 9$

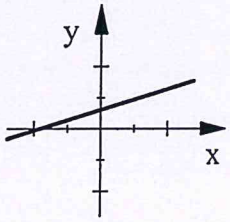
6. $Ax + By = C$

In the equation above, A, B, and C are positive constants. Which of the following could be the graph of the equation in the $xy-plane$?

A) 

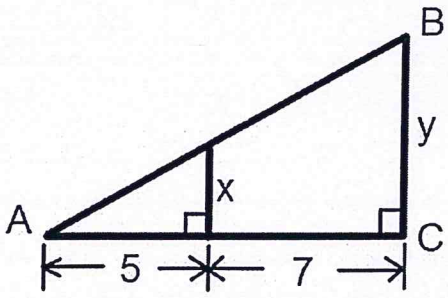
B) 

C) 

D) 

since A, B, & C ARE positive both x-int & y-int will be positive. only Graph B has 2 positive intercepts

Answer is B

7. 

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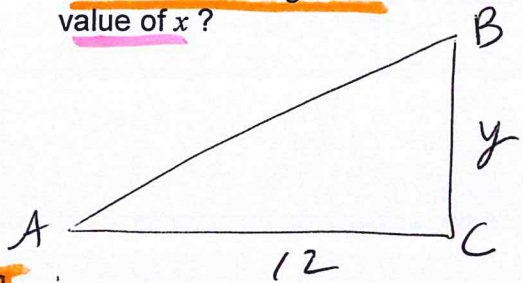
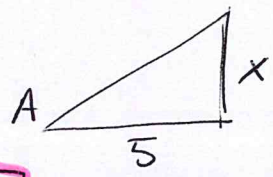


1

Area of ΔABC:

$A = \frac{1}{2}bh = \frac{1}{2}(12)(y) = 6y$

$A = 6y$



3

Δ's are similar

$\frac{x}{y} = \frac{5}{12}$

$x = \frac{5}{12}y$

$x = 5/12(8)$ or $5/12(9)$ or $5/12(10)$ $\rightarrow$ $x = \frac{10}{3}, \frac{15}{4}$ or $\frac{25}{6}$

2

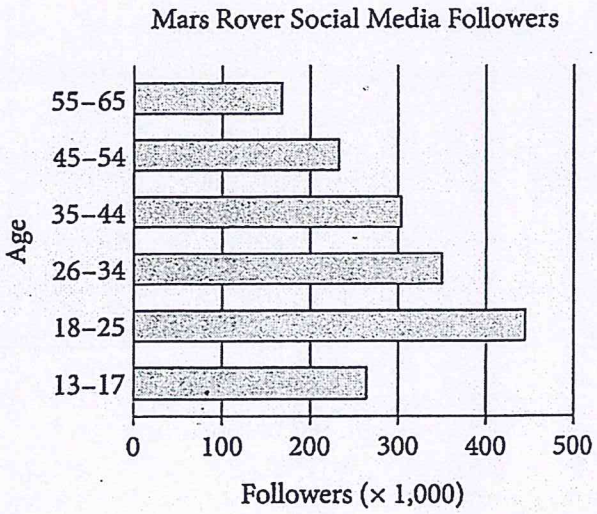
$48 \le A \le 60$

$\frac{48}{6} \le \frac{6y}{6} \le \frac{60}{6}$

$8 \le y \le 10$

y is 8, 9, or 10

8.



The total number of followers of a Mars rover's social media account is 1,764,000, as summarized by age in the graph above. Which of the following could be the median age of the followers?

A) 37 B) 29 C) 20 D) 16

median = middle # or # where half the data is less than it and half the data is greater.

TOTAL OF 1,764,000 followers

if measure in 1000's = 1,764

1764 ÷ 2 = 882

middle # ≈ 882 follower

13-17 ≈ 260

+ 18-25 ≈ 450

710

26-34 ≈ 350

> 882 # would be in the bar representing 26-34

Therefore B is the most reasonable answer