

ALEKS' MSTEP 8th grade practice #1

1. The sum of two numbers is 42. One number is 2 times as large as the other. What are the numbers?

$$2b + b = 42 \quad \frac{3b}{3} = \frac{42}{3} \quad b = 14$$
$$2b = 28$$

2. Solve for y.

$$3y - 8 = -20$$
$$\frac{3y}{3} = \frac{-12}{3} \quad y = -4$$

Simplify your answer as much as possible.

3. Solve the following system of equations.

$$6x + 9y = -3$$
$$6x + 5y = 9$$

$$6x + 9(-3) = -3$$
$$6x - 27 = -3$$
$$\frac{6x}{6} = \frac{24}{6} \quad x = 4$$

(A)

$$\frac{6x}{6} = \frac{-3 - 9y}{6}$$
$$x = \frac{-3 - 9y}{6}$$

(x = 4, y = -3)

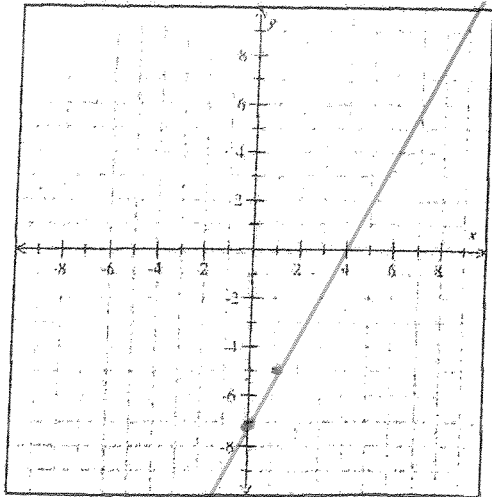
(B)

$$6(-3 - 9y) + 5y = 9$$
$$-3 - 9y + 5y = 9$$
$$-9y + 5y = 12$$
$$\frac{-4y}{-4} = \frac{12}{-4}$$
$$y = -3$$

4. Graph the function $g(x) = 2x - 7$.

$$y = 2x - 7$$

x	y
1	-5
0	-7



5. Rewrite using a single positive exponent.

$$\frac{7^5}{7^1} = 7^4$$

$$23 + 18y = -21 + 14y$$

$$18y - 14y = -21 - 23$$

$$\frac{4y}{4} = \frac{-44}{4} \quad y = -11$$

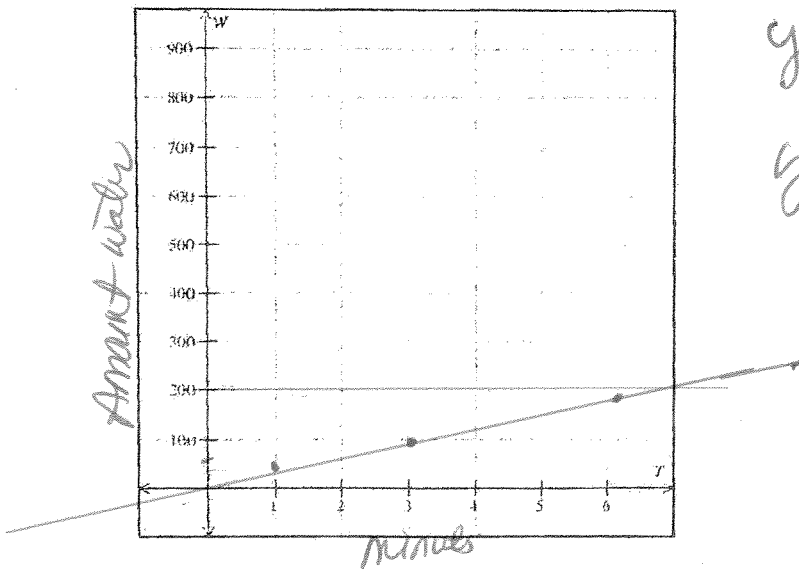
8. Solve for y .

$$23 + 18y = -21 + 14y$$

Simplify your answer as much as possible.

9. Owners of a recreation area are filling a small pond with water. They are adding water at a rate of 35 liters per minute. There are 700 liters in the pond to start.

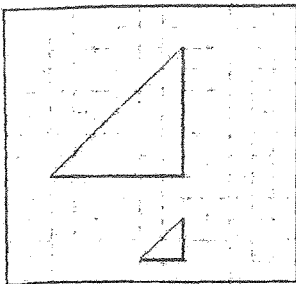
Let W represent the amount of water in the pond (in liters), and let T represent the number of minutes that water has been added. Write an equation relating W to T , and then graph your equation using the axes below.



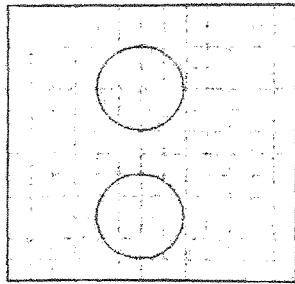
$$y = \frac{100}{3} \times \text{minutes}$$

$$y = .33x$$

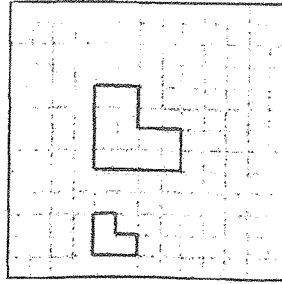
10. Which pairs of figures are congruent? Which pairs are similar?



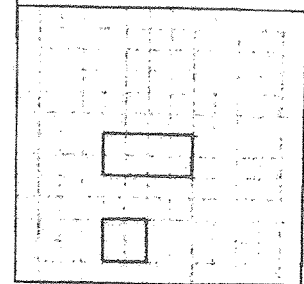
Congruent? Yes No
 Similar? Yes No



Congruent? Yes No
 Similar? Yes No



Congruent? Yes No
 Similar? Yes No



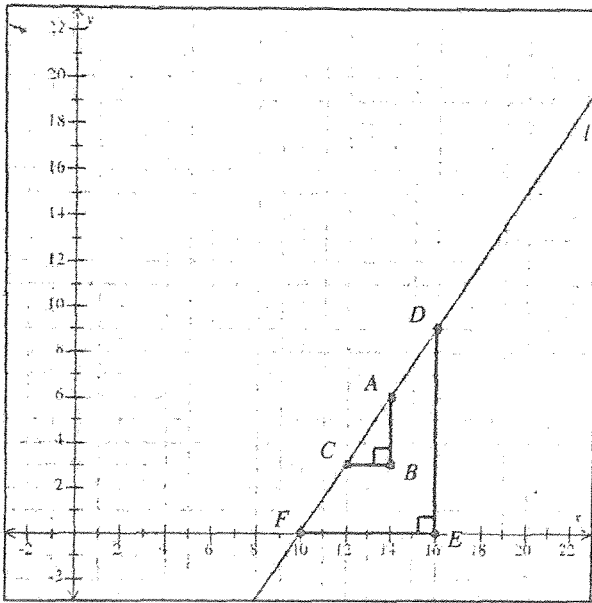
Congruent? Yes No
 Similar? Yes No

14. Line l is shown below.

Right triangles ABC and DEF are drawn to measure the slope of the line.

Find the run, rise, and slope given by each triangle.
Then, answer the questions.

$$\text{Slope} = \frac{3}{2}$$



Triangle ABC :

run: 2 rise: 3 slope: $\frac{3}{2}$

Triangle DEF :

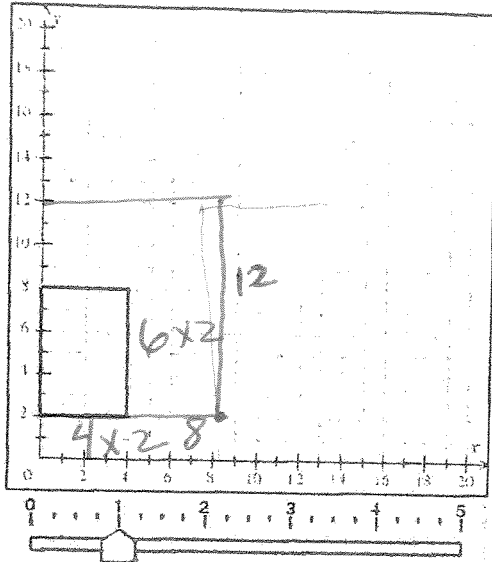
run: 6 rise: 9 slope: $\frac{9}{6}$

Are the two slopes computed above equal? Why or why not?

- A. Yes. They are equal because the two triangles are similar.
- B. Yes. They are equal because the two triangles are congruent.
- C. No. They are not equal because the larger the triangle, the larger the slope.
- D. No. They are not equal because the smaller the triangle, the smaller the slope.

19. For the figure below, do a dilation centered at the origin with a scale factor of 2.

Then answer the questions.



(a) Find the following.

Area of original figure: _____ square units

Area of final figure: _____ square units

(b) Fill in the blank to make a true statement.

Area of final figure = _____ \times Area of original figure

(c) True or False?

The original figure and the final figure are similar.

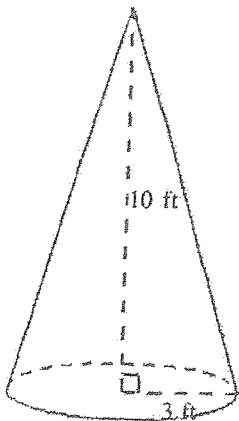
True False

20. Calculate.

$$(3 \times 10^9)(1.3 \times 10^7) = 3.9 \times 10^{16}$$

Write your answer in scientific notation.

21. Find the volume of a cone with a base radius of 3 ft and a height of 10 ft. Write the exact volume in terms of π , and be sure to include the correct unit in your answer.



$$V = \pi r^2 \frac{h}{3}$$

$$V = \frac{1}{3} h \pi r^2$$

$$V = 3.14(3)^2 \cdot \frac{10}{3}$$

$$V = 94.2 \text{ ft}^3$$

22. Write $\frac{7}{16}$ as a decimal.

$$0.4375$$

23. Use the distributive property to remove the parentheses. Simplify your answer as much as possible.

$$\frac{2}{5}(4 - 15w) = 1.6 - 6w$$