

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

Solve and simplify the given expressions and/or equations:

1.  $(-2)^{-3} \times (-2)^4$

2.  $(-2)^2(-2)^2$

3.  $-2p + 3 + 7p = -12$

4.  $6(8 - 4q - 6q) + 4(9q + 9) = 12$

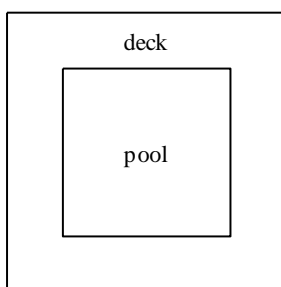
5.  $-9n + 6 = -18 + 3n$

6.  $\frac{3}{4} + \frac{4a}{7} = \frac{6a}{7} + \frac{7}{8}$

7. Evaluate  $\frac{a^0 b^{-3}}{b}$  for  $a = 4$  and  $b = -1$ .

8. Graph the numbers  $\sqrt{9}$ ,  $1.2$ ,  $\sqrt{81}$ ,  $\frac{1}{4}$ ,  $\pi$  on a number line. Then, order the numbers from least to greatest.

9. Fredrick's dad is installing a new pool in their backyard. The pool is a square and has an area of  $100 \text{ ft}^2$ . Fredrick's dad will then build a 5 ft wide deck to surround the pool. What is the outside perimeter of the deck?



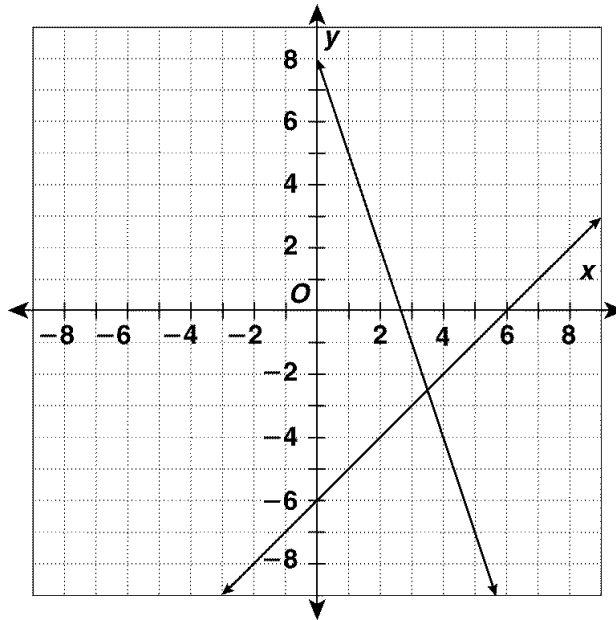
10. Write the quotient of  $(5.04 \times 10^6) \div (3.6 \times 10^2)$  using scientific notation?

11. Jasmine's class earned \$85.00 Saturday afternoon washing cars to raise money for a class trip. This is  $\frac{1}{2}$  of the money needed for the trip. What is the total amount needed?

12. A season ticket holder pays \$104.40 for her tickets plus \$3.00 for a program each game. A second person pays \$14.60 for a ticket to every game, but doesn't buy programs. In how many games will they have paid the same amount?

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

13. The graph of a system of linear equations is shown below. What is the solution to the system?



14. Solve the system of equations.  $2x + 2y = 18$   
 $6x + y = 39$

15. Determine if the relation represents a function.

$x$	$y$
0	-5
1	-2
2	1
3	5

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

16. David is remodeling his bathroom and needs to have some plumbing work done. If both plumbers' cost is a proportional relationship based on the number of hours worked, which of the following statements is true?

Plumber A: 4 hours costs \$100; 6 hours costs \$150

Plumber B: cost = 20(number of hours)

17. The graph of which of the following equations passes through the y-axis at a point other than the origin?

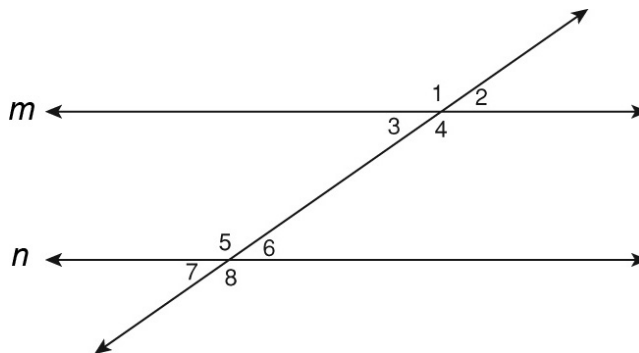
I.  $y = 12x$

II.  $y = -\left(\frac{4}{3}\right)x$

III.  $y = -\left(\frac{2}{3}\right)x + 8$

IV.  $y = 7x + 5$

If line  $m \parallel$  line  $n$  use the given figure below to answer questions 18 - 19.

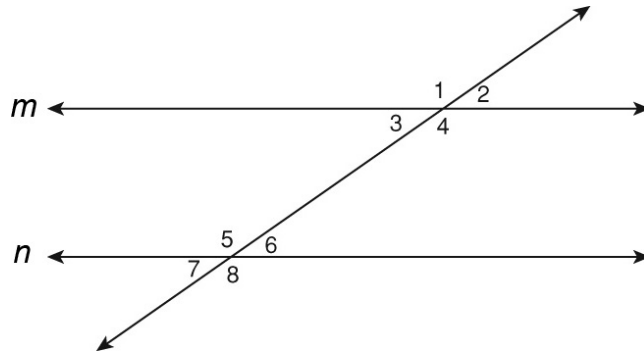


18. Which of the angles in the figure are supplementary to  $\angle 3$ ?

19. Classify the following pair of angles:  $\angle 4$  and  $\angle 5$

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

20. If line  $m \parallel$  line  $n$  and  $\angle 4$  measures  $135^\circ$ , what is the measure of  $\angle 3$ ?

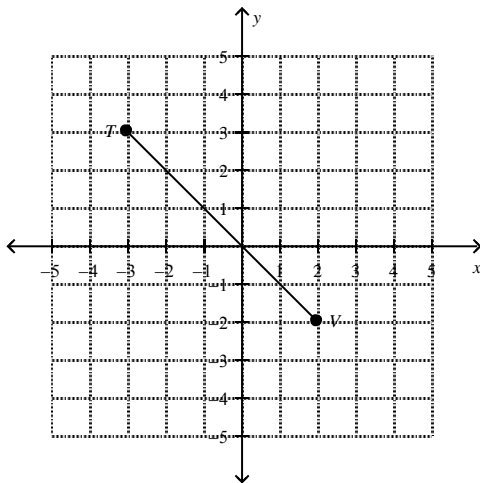


21. If two angles are supplementary and one of these has an angle measure of  $73^\circ$ , then what is the measure of the other angle?

22. What is the distance between  $A(0, 5)$  and  $B(5, -7)$ ?

23. Find the distance from  $B(-3, -4)$  to  $D(-2, 2)$ . If necessary, round to the nearest tenth.

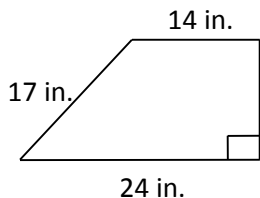
24. Find the distance from  $T(-3, 3)$  to  $V(2, -2)$ . If necessary, round to the nearest tenth.



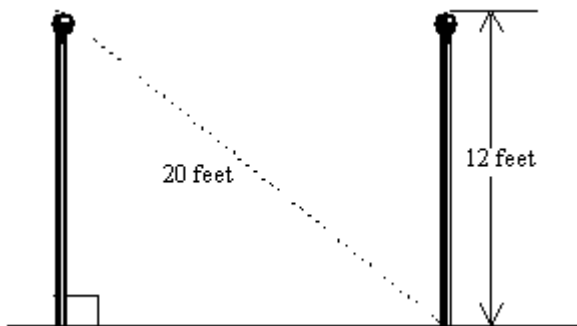
25. The legs of an isosceles right triangle are 16 cm long. Find the length of the hypotenuse. Round the answer to the nearest tenth if necessary.

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

26. The dimensions of a right trapezoid-shaped figure has bases of 24 inches and 14 inches, and the slant height is 17 inches. What is the height of the trapezoid, in inches? Round your answer to the nearest tenth.

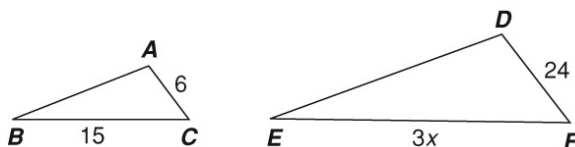


27. There are two flag poles in front of the school, and they each are 12 ft tall. The distance from the top of one pole to the base of the other as shown in the diagram is 20 ft. What is the distance between the two flag poles?



28. A diver has a rope connecting the dive boat to an anchor on the ocean floor. The rope is 150 feet long and the water is 70 feet deep. To the nearest tenth of a foot, how far is the anchor from a point directly below the boat?

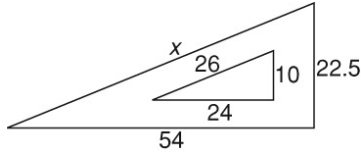
29. Triangle ABC is similar to triangle DEF. What is the value of  $x$ ?



30. A photograph 8 inches wide by 10 inches long is scaled to 4.5 inches long in a magazine. What is the width of the published picture?

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

31. The two triangles are similar. Identify the scale factor of the dilation from the smaller triangle to the larger triangle.



32. Write the equation for the given points:

$x$	$f(x)$
0	4
1	6
2	8
3	10

33. Write the equation for the given points:

$x$	$f(x)$
0	1
1	$1\frac{1}{2}$
2	2
3	$2\frac{1}{2}$
4	3

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

34. Mr. Richardson and Mrs. Hawthorn both fill up their cars with gasoline at the beginning of the week. The equation compares the number of miles driven,  $x$ , to the amount of gasoline in the tank,  $f(x)$ . Find and compare the  $y$ -intercepts for the models and interpret their real-world meanings.

**Mr. Richardson's Car**

$$f(x) = -\frac{1}{20}x + 14.4$$

**Mrs. Hawthorn's Car**

<b>Miles Driven</b>	0	8
<b>Gasoline Remaining (gallons)</b>	12.8	12.6

35. Tell whether the ordered pair  $(5, -3)$  is a solution of the system  $\begin{cases} -3x + 2y = -21 \\ -x - y = -2 \end{cases}$ .

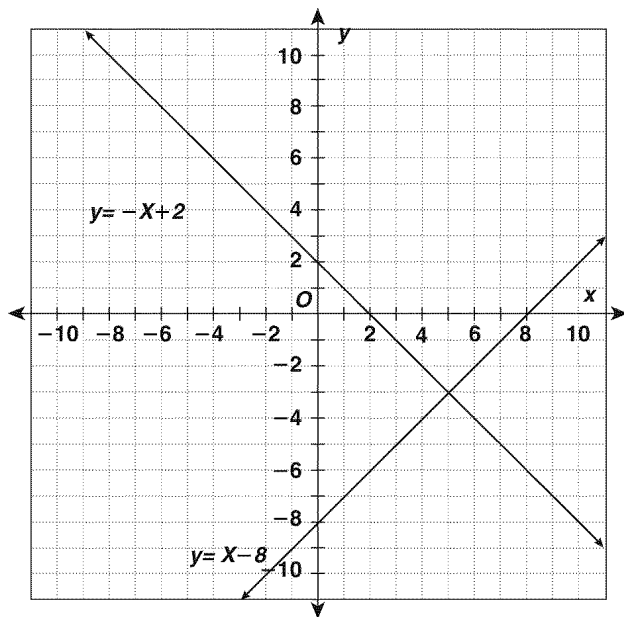
36. What is the solution to the system of equations?

$$y = 3x + 1$$

$$y = 5x - 3$$

**Summer Mathematics Review**  
**Upcoming 9<sup>th</sup> Graders**  
**Show your work!**

38. Write the solution to the system graphed below?



39. Solve  $\begin{cases} -7x + 5y = -5 \\ -9x + 5y = 5 \end{cases}$  by elimination. Express your answer as an ordered pair.

40. Solve  $\begin{cases} 2x - 5y = -7 \\ 5x - 3y = 11 \end{cases}$  by elimination. Express your answer as an ordered pair.

41. Solve the given system by graphing.  $\begin{cases} -3x + y = -11 \\ 3x + 3y = -9 \end{cases}$

42. Solve the given system of equations.  $\begin{cases} y = -x + 7 \\ y = +4x - 3 \end{cases}$

43. Solve the system  $\begin{cases} 2x + y = 2 \\ 3x + y = 1 \end{cases}$  by graphing.

44. Solve the system by substitution:  $\begin{cases} y = -5x + 9 \\ 5x + y = -3 \end{cases}$