

Many of these problems will be done on your own sheet of paper and/or graph paper. The problems are separated by date learned and in order. DO NOT ASSUME THAT THE TEST WILL BE IN THE SAME ORDER, THE SAME NUMBER OF EACH TYPE OR THAT THE NUMBERS WILL JUST BE CHANGED!

Simplifying, Evaluating and Solving.

1) Simplify

a) $3a(2b+5) - 2a(6-a)$

b) $5x(2z+3x) + (2x)^2 - 3z^2$

2) Evaluate

a) $2x(3y+2) - \frac{1}{3}(5z+6)$ for $x=5, y=-2,$ and $z=3$

b) $2a^2 + 5(2c-7b)$ for $a=-4, b=-3,$ and $c=-7$

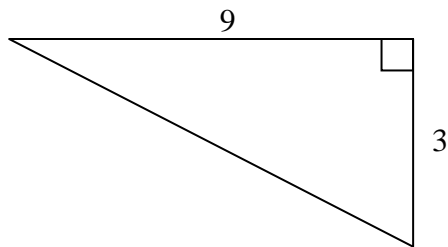
Solve and Justify.

c) $\frac{1}{2}x + 5 = \frac{5}{2}x + 15$

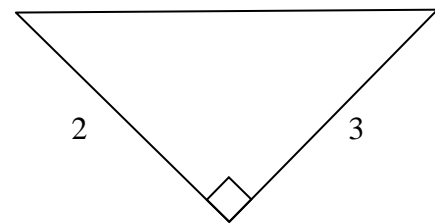
b) $5x - 2(x-3) = \frac{3}{4}(16-2x)$

3) Find the missing side of each triangle. Express your answer as a simplified radical.

d)



b)



4) Simplify

a) $\sqrt{18}$

b) $\sqrt{28}$

c) $3\sqrt{27}$

d) $-5\sqrt{108}$

Graphing in the Cartesian Plane

5) Graph the lines and label the line

a) $y = -2x + 1$

b) $3y = 4x - 6$

c) $2x - 4y = 12$

6) Determine whether each set of equations are parallel, perpendicular, intersecting or coinciding

a) $\begin{cases} y = 3x + 4 \\ -6y = 2x - 1 \end{cases}$

c) $\begin{cases} 2x - 3y = 5 \\ 4x - 10 = 6y \end{cases}$

b) $\begin{cases} 5x + 10y = 30 \\ y = \frac{1}{2}x - 2 \end{cases}$

d) $\begin{cases} y = \frac{2}{3}x - 5 \\ 2x + 3y = 18 \end{cases}$

Systems of Equations

7) Solving systems using substitution or elimination

a) $\begin{cases} 2x - 4y = -8 \\ y = -x + 5 \end{cases}$

b) $\begin{cases} 2y = 2x - 4 \\ 2x + 2y = 4 \end{cases}$

8) Find the errors and fix the problem

$$\begin{cases} 2y = 3x + 2 \\ 2x - 4y = 20 \end{cases}$$

$$\frac{2y}{2} = \frac{3x}{2} - \frac{4}{2}$$

$$y = \frac{3}{2}x + 1 \quad \text{Substitute into } 2x - 4y = 20$$

$$2x - 4\left(\frac{3}{2}x + 1\right) = 20$$

$$2x - 6x + 4 = 20$$

$$-4x = 16$$

$$x = -4 \quad \text{Substitute into } y = \frac{3}{2}x + 1$$

$$y = \frac{3}{2}(-4) + 1$$

$$y = -6 + 1$$

$$y = -5$$

$$(-4, -5)$$

Quadratic Equations

9) Identify each equation as linear or quadratic

a) $(5x + 1)(3x - 2) = 15x^2 - 5$

b) $3x(2x + 2) = 4(5x - 1)$

10) Solve each quadratic

a) $r^2 + 4r + 3 = 0$

b) $t^2 = 13x - 42$

c) $5d^2 - 9 = 36$

Slope, Midpoint, and Distance

11) Slope of a line

a) Draw a line with a slope of zero.

b) Draw a line with an undefined slope.

12) Midpoint of a segment

a) \overline{FC} is a diagonal of square FACE. If the endpoints of the diagonal are $(-2, 5)$ and $(4, -6)$, what is the coordinate of the center of the square?

b) A is the midpoint of segment \overline{CT} . A is located at $(7, -2)$ and T is located at $(11, -8)$. What is the coordinate of point C?

13) Distance/Length of a segment

a) \overline{FC} is a diagonal of square FACE. If the endpoints of the diagonal are $(-2, 5)$ and $(4, -6)$, Find FC.

b) Find two points on the y-axis that are a distance of 13 units from $(-12, 0)$