

# **Honors 9<sup>th</sup> Grade Geometry Summer Packet Due: August 20, 2021 (last day of Freshman Academy)**

- In order to receive full credit for a problem, all work must be shown.
- Problems with an answer and no work will receive no credit.
- Khan Academy is a great website that can refresh your memory if you have forgotten topics.
- Answers to select problems are attached on the last page.
- If you will not be attending the last day of Freshman Academy, you must make arrangements to turn in your packet PRIOR to the 20th with your teacher or it will be considered late.

Name: \_\_\_\_\_

8<sup>th</sup> Grade Teacher: \_\_\_\_\_

What is an equation?

What is an inequality?

What is an expression?

What is “m”?

What is “b”?

What do you know about perpendicular slopes?

What do you know about parallel slopes?

What is slope intercept form?

What is the formula to find slope between two lines?

In an ordered pair the “x” tells you to go: up/down or left/right?

In slope, does the numerator tell you to go: up/down or left/right?

What is the Pythagorean Theorem?

Solve the following equations. Leave your answer in simplified fraction form if it is not a whole number.

1)  $2x - 5 = 6 + x$

2)  $4x - 5 + 2x + 7 = 18$

3)  $2(4x + 6) = 7x - 10$

4)  $4 - x = 10$

5)  $5(2x + 7) + 10 = 45$

6)  $3 + \frac{3}{4}(4x - 1) = 20$

7)  $5 - 2(3x + 4) + 8x = 2x + 4$

8)  $-2x + 4 = 5 - 10x$

9)  $2x + 5 + 6 + 2x = 4x + 11$

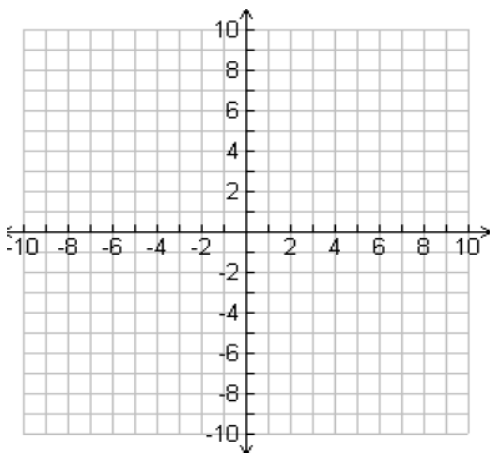
10)  $-4 = \frac{x}{3} + 2$

11)  $\frac{3x+7}{5} + 4 = 14$

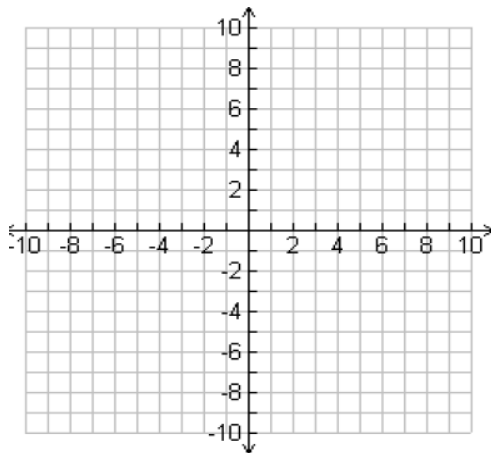
12)  $\frac{2}{3}x - \frac{1}{4} = 8$

Graph the following lines by identifying the slope and y intercept. If possible, be sure to make three dots on each graph.

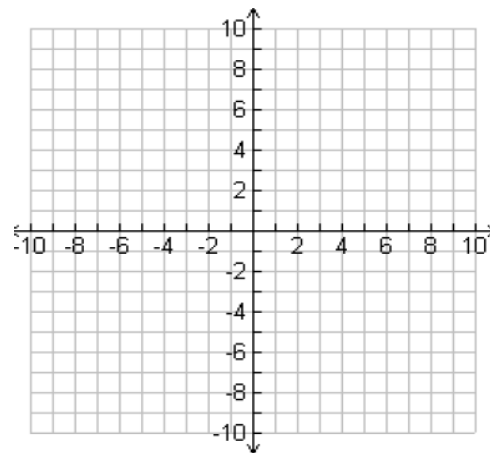
1)  $y = 7x - 4$



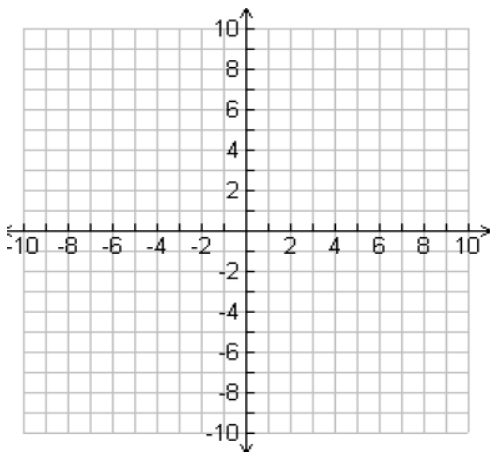
2)  $x = 7$



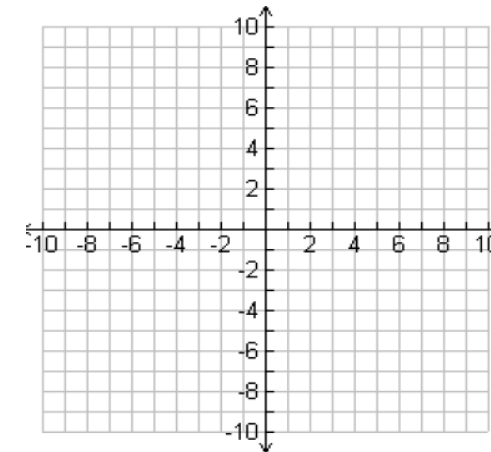
3)  $y = -8x$



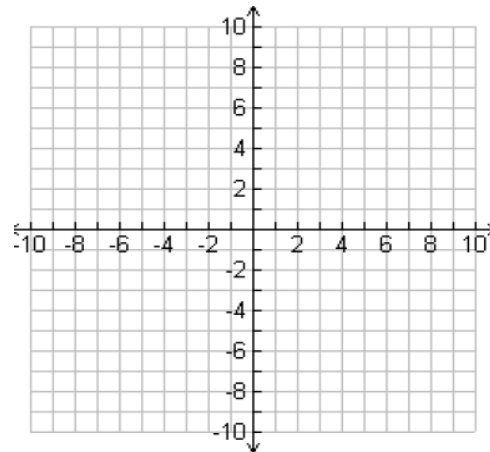
4)  $y = -6 + x$



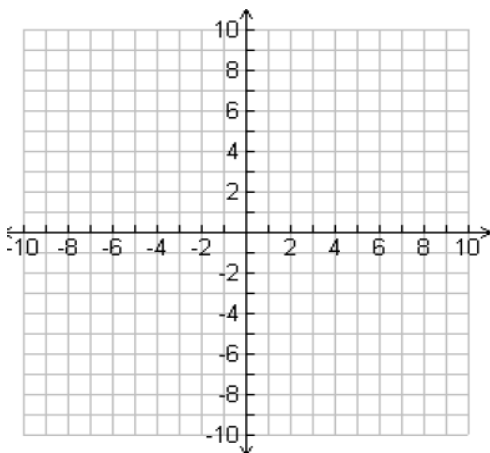
5)  $y = 8$



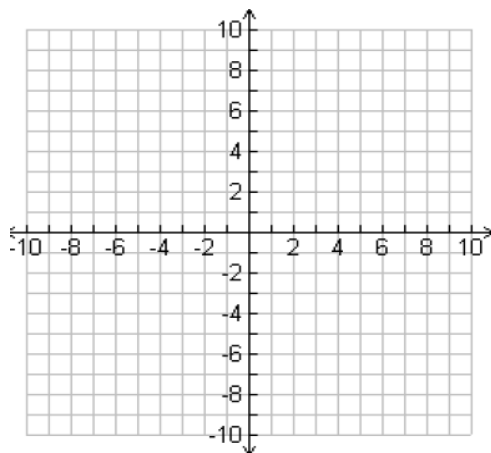
6)  $y = -\frac{5}{6}x + 2$



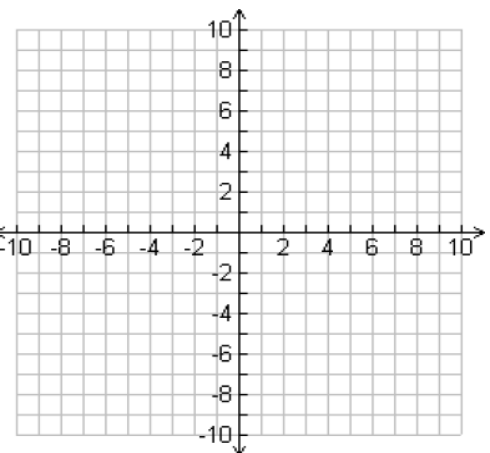
7)  $2x - 3y = 12$



8)  $x + 2y = -8$



9)  $7x - 9y = 63$



Answer the following questions.

1) Write the equation of a line in **slope intercept form** that has a slope of -6 and a y intercept of -10

2) Write the equation of a line in **slope intercept** form that has a slope of  $-\frac{2}{5}$  and goes through (-15, 8)

3) Write the equation of a line in **slope intercept** form that goes through (-10, 8) (-9, 3)

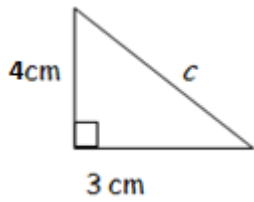
4) Write the equation of a line **parallel** to  $y = -2x + 5$  and through (-8, 10) in **slope intercept form**.

5) Write the equation of a line **perpendicular** to  $y = -\frac{4}{5}x + 4$  and through (-8, 6) in **slope intercept form**.

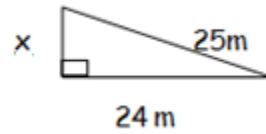
6) What is the slope of a line that is perpendicular to  $y = 4x - 5$ ?

Find the missing sides of the following triangles using Pythagorean Theorem.

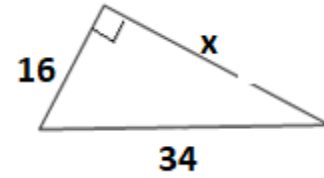
1)



2)



3)



4) You are setting up a volleyball net. To keep each pole straight and perpendicular to the ground, you hold it with ropes and stakes. If the pole is 8 ft tall and the taut rope is placed 4 feet away from the base of the pole, how long is the rope?

HINT: TAUT means that the rope is pulled tight so there is no slack

5) A football field is a rectangle that is 100 yards by 60 yards. What is the length of the diagonal from one corner of the field to the opposite corner?

Simplify the following radicals.

1)  $\sqrt{16}$

2)  $\sqrt{75}$

3)  $\sqrt{63}$

4)  $6\sqrt{200}$

5)  $3\sqrt{3} - 4\sqrt{3}$

6)  $6\sqrt{2} + 5\sqrt{5} - 6\sqrt{2}$

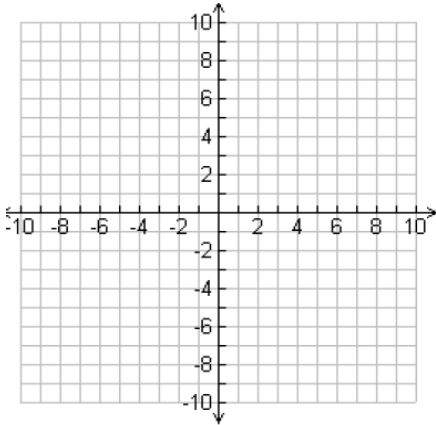
7)  $\sqrt{9} \cdot \sqrt{5}$

8)  $2\sqrt{3} + 4\sqrt{27}$

Solve the following systems by graphing.

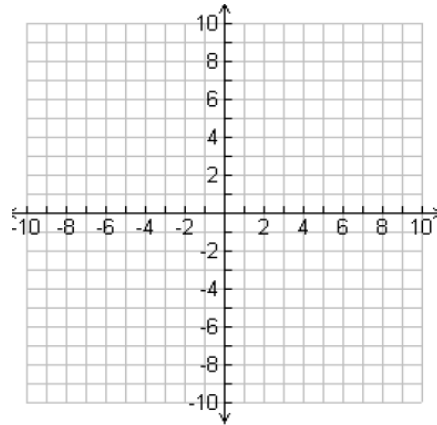
$$1) y = -2x + 2$$

$$4x + 2y = 2$$



$$2) y = -1/2x - 2$$

$$3x + 2y = 4$$



Solve the following systems by substitution.

$$3) 3x - y = 4$$

$$x = 4y - 17$$

$$4) y = 2x + 7$$

$$x = 3$$

$$5) Y = -5x - 13$$

$$Y = -1x - 1$$

$$6) y = 3x$$

$$y = 7x - 16$$



Solve the following by elimination.

$$\begin{aligned} 7) \quad & -3x + 7y = -16 \\ & -9x + 5y = 16 \end{aligned}$$

$$\begin{aligned} 8) \quad & 16x - 10y = 10 \\ & -8x - 6y = 6 \end{aligned}$$

$$\begin{aligned} 9) \quad & -10x - 6y = 2y + 22 \\ & 6y + 3x = -21 \end{aligned}$$

Selected Answers

Page 3: 1) 11 3)  $x = -22$  5)  $x = 0$  7) no solution 11)  $x = 43/3$  12)  $99/8$

Page 5: 2)  $y = -2/5x + 2$  3)  $y = -5x - 42$  5)  $y = 5/4x + 16$

Page 6: 1)  $c = 5$  cm 3) 34 units 5) 116.6 yards

Page 7: 1) 4 3)  $3\sqrt{7}$  4)  $60\sqrt{2}$  7)  $3\sqrt{5}$

Page 8: 3) (3, 5) 5) (-3, 2)

Page 9 7) (-4, -4) 9) (1, -4)