



## MIDDLE SCHOOL

### Algebra 1 Summer Review

Welcome to 8<sup>th</sup> grade Algebra 1! In preparation for finishing Algebra 1, it is important to master certain algebra concepts. You should complete this review to continue practicing basic Algebra throughout the summer. The expectation is that you try your best to complete each problem and that you show your work. Do not use a calculator.

You will complete six problems each week for ten weeks this summer. The purpose of this schedule is to divide the work into manageable sections and to continuously review throughout the summer, but you may adjust this schedule as needed with your summer plans. The completed packet should be turned in on **the first day of classes** and will be graded for **completion**. You can expect an **assessment during the first week of classes** covering this material. Use your notes from 7<sup>th</sup> grade to help you complete this summer review.

### Week One

1. Find the mean, median, and mode for each set of data. Round to the nearest tenth when necessary.

32 43 40 39 38 43 40 42 43 44 43 41

Mean: \_\_\_\_\_ Median: \_\_\_\_\_ Mode: \_\_\_\_\_

2. Solve the equation.

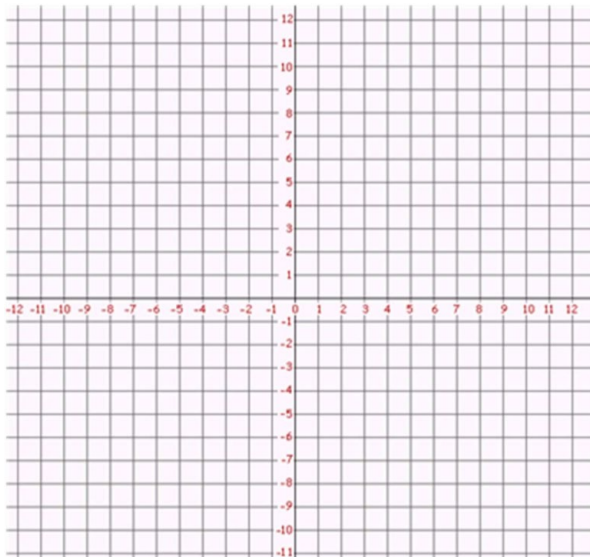
$$\frac{x + 2}{9} = 5$$

3. Solve. Round to the nearest tenth where necessary.

What is 30% of 320?

4. Graph the line.

$$y = -\frac{1}{2}x - 5$$



5. Simplify. Reduce fractions to lowest terms. – no calculators

$$\frac{4}{9} \div 2\frac{2}{3}$$

6. Write the equation of a line that passes through the points (4,6) and (2, -5).

**Week Two**

1. Simplify. Reduce fractions to lowest terms. Do this without the use of a calculator.

$$4\frac{1}{2} - 2\frac{2}{3}$$

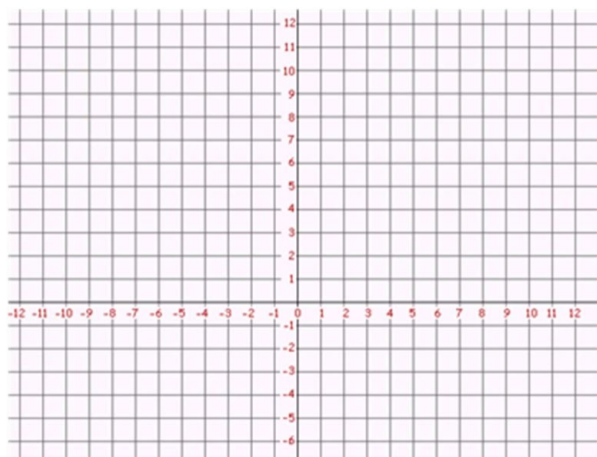
2. Solve the equation.

$$\frac{4y - 3}{8} = 2$$

3. Solve for x.

$$\frac{3x - 4}{2} = \frac{4x + 6}{3}$$

4. Graph the function.  $y = \frac{3}{4}x - 2$



5. Solve the inequality. Graph your answer on a number line.

$$6x + 3 < -2x + 19$$

6. Find the slope of a line that passes through the given points.  
(4, 9) and (4, -4)

### **Week Three**

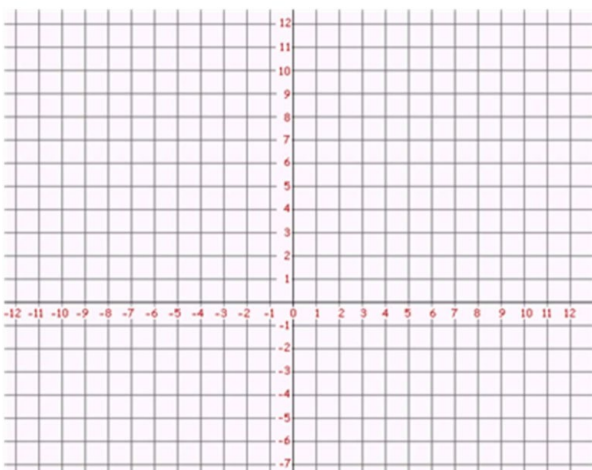
1. Solve the equation.

$$3(x + 4) - 5(x + 2) = 6(x - 5) - 4$$

2. A man earns \$2750 a month. Last month he spent \$800 on rent. What percent of his income was spent on rent?

3. Evaluate the function rule for  $x = -3$ .  
$$f(x) = x^2 - 2x - 3$$

4. Graph the line that passes through the following two points: (4, 6) and (3, 8). Then write the equation of the line.



5. Solve the equation.

$$\frac{1}{2}(4x + 8) - 3x = \frac{3}{4}(12x - 8) + 10$$

6. Write the equation in slope-intercept form.

$$-3x + 4y = 20$$

#### **Week Four**

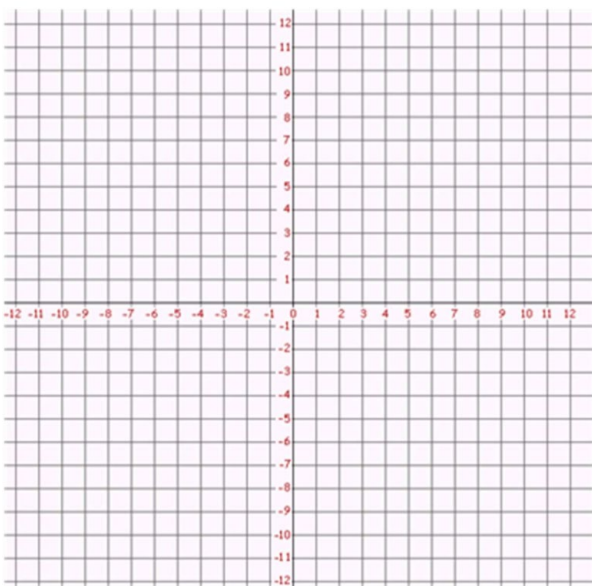
1. Solve for x.

$$\frac{1}{2}(4x + 8) = \frac{2}{3}(9x - 6)$$

2. Solve the inequality. Graph your answer on a number line.

$$8y > -16 \text{ or } -3y + 5 > 8$$

3. Graph the line.  $5x - 10y = -20$



4. Solve for x without the use of a calculator.

$$4.3x - 8.6 = -2.7x + 6.1$$

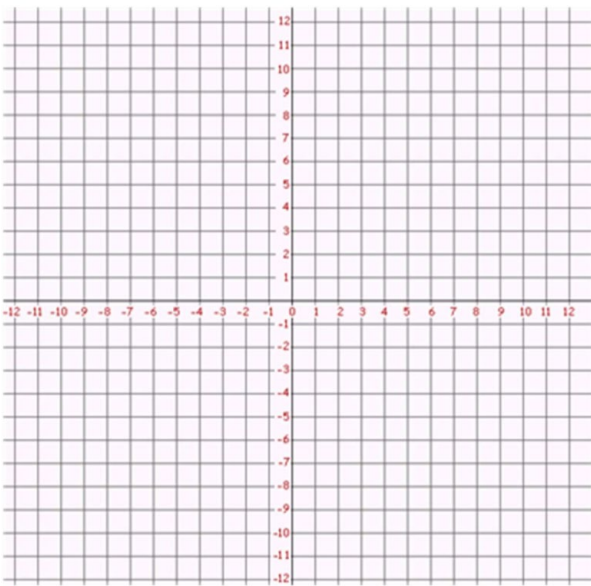


5. Evaluate the function for  $x = -5$

$$f(x) = 2x^2 - 3$$

6. Graph the line using x and y-intercepts.

$$3x - 4y = -12$$



### Week Five

1. Solve the inequality and graph your answer on a number line.

$$-8 < 2x + 6 < 4$$

2. What percent of 170 is 68?

3. Solve the equation.

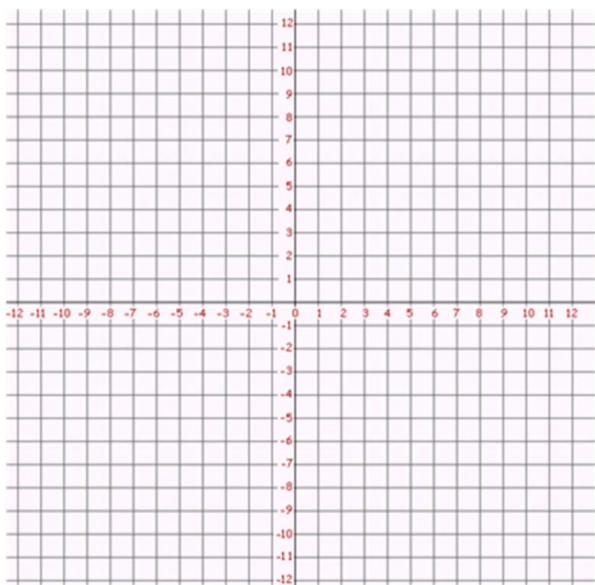
$$\frac{1}{2} = \frac{2}{5}m - 3$$

4. Write an equation for the problem and solve.

An airplane flies from New Orleans, Louisiana, to Atlanta, Georgia, at an average rate of 350 miles per hour. The airplane then returns at an average rate of 250 miles per hour. The total travel time is 3 hours. Find the flying time from New Orleans to Atlanta.

5. Graph the function. Then write the equation of a line parallel to the given line that passes through (6, 2).

$$f(x) = -\frac{1}{2}x - 4$$



6. Determine if the lines are parallel, perpendicular or neither.

$$y = 3x + 4$$
$$2x + 6y = 12$$

### Week Six

1. Write an equation for the problem and solve.  
Five more than 3 times a number is the same as 10 less than 6 times the number. Find the number.

2. Find the domain and range of the function.

$$\{(3, -1), (5, 5), (7, 3), (8, -2)\}$$

3. Evaluate the function rule for  $x = -3$ .

$$g(x) = |2x - 5| + 1$$

4. Write a proportion or an equation and find the answer.  
140% of 84 is what number?

5. Solve the equation.

$$2y - 8 = -\frac{1}{2}(3 - 5y)$$

6. Solve the system of equations.

$$\begin{aligned}6x - 12y &= 24 \\ -x - 6y &= 4\end{aligned}$$

### **Week Seven**

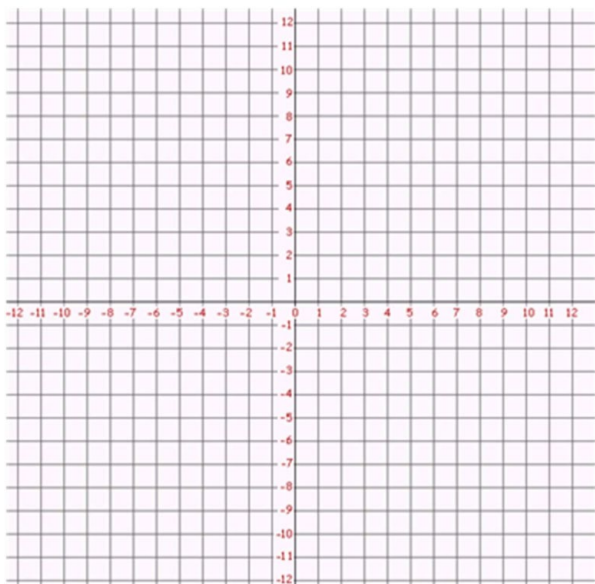
1. Write an equation of the line from the pair of points.

$(-2, -3)$  and  $(2, -5)$

2. **Define a variable and write an equation to model each problem and solve.**

The length of a rectangle is 3 more than twice the width. The perimeter of a rectangle is 36. Find the length and width.

3. Graph  $y = -4$ .



4. Solve the equation.

$$\frac{3}{4}x - \frac{2}{3} = \frac{5}{8}x + \frac{5}{6}$$

5. Simplify the expression  $15 - (6 + 3^2) + 7$

6. Solve the system of equations.

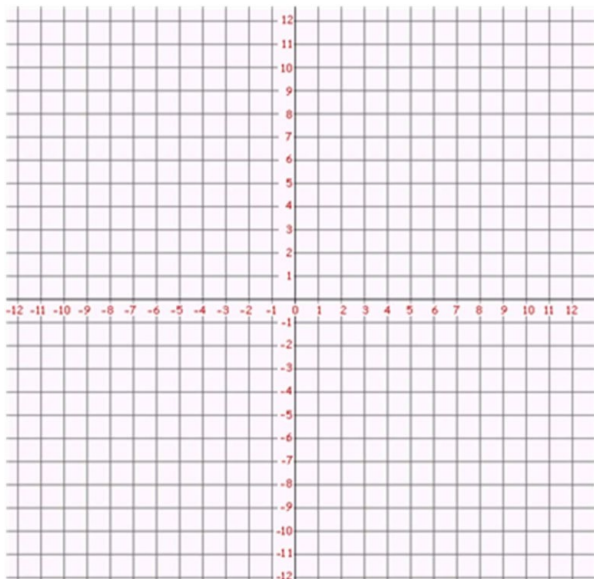
$$\begin{aligned}8x - 6y &= -20 \\ -16x + 7y &= 30\end{aligned}$$

### **Week Eight**

1. Solve the proportion.  $\frac{5n+1}{8} = \frac{1}{2}$

2. Graph the equation.

$$3x - 3y = 9$$



3. Solve the equation.

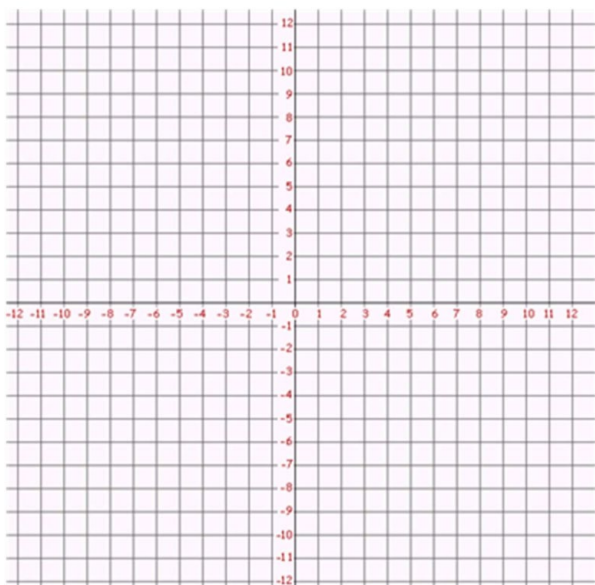
$$\frac{1}{2}w + 3 = \frac{2}{3}x - 5$$

4. Evaluate the expression.

$$4(5 - 3)^2 - 3^2$$



5. Plot the points. Determine if the relation is a function using the vertical line test.  
 $\{(5,0), (0,5), (5,1), (1,5)\}$



6. Write the equation in slope-intercept form.

$$-3x + 9y = 27$$

### Week Nine

1. Solve for y.

$$2y + 3 = -2(x - 1)$$

2. Solve the equation.

$$5x - 8 + 3(x - 4) = 6(x + 4)$$

3. Evaluate  $\frac{4a^2}{2b-3}$  for  $a = 3$  and  $b = 6$ .

4. Simplify.

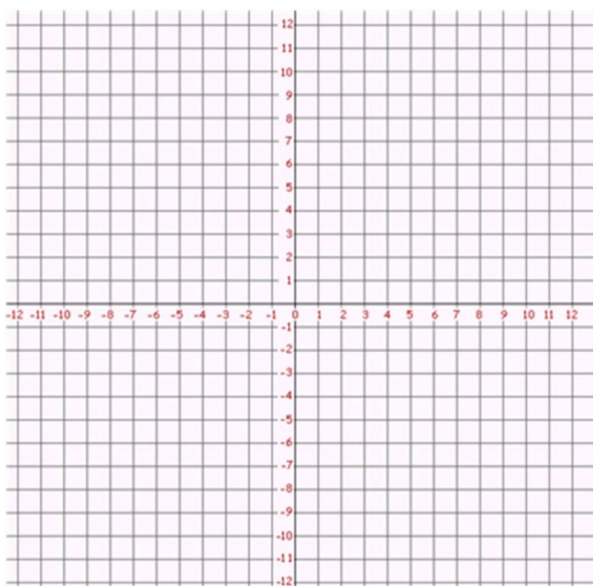
$$\frac{3x^{-2}}{6x^4}$$

5. Solve.

$$12.2 = 5.3x - 3.7$$

6. Solve the system of equations by graphing.

$$\begin{aligned}4x + y &= 2 \\ x - y &= 3\end{aligned}$$



### Week Ten

1. Solve the equation.

$$5x - 2(x - 15) = 10$$

2. You are riding your bicycle. It takes you 12 minutes to go 2.5 miles. If you continue traveling at the same rate, how long will it take you to go 7 miles?

3. Simplify.

$$(7x^2)(2x^{-3})(-5x^{-9})$$

4. Simplify:

$$\frac{-6 - (-8)}{9 - 5}$$

5. Divide.

$$2\frac{2}{5} \div \frac{3}{4}$$

6. Graph the line.  
 $x = -4$

