

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

# ***Algebra 1***

## **Summer Review Packet**

### **DUE THE FIRST DAY OF SCHOOL**

#### **About Algebra 1:**

Algebra 1 teaches students to think, reason and communicate mathematically. Students use variables to determine solutions to real world problems. Skills gained in Algebra 1 provide students with a foundation for subsequent math courses. Students use a graphing calculator as an integral tool in analyzing data and modeling functions to represent real world applications. Each student is expected to have a graphing calculator in class every day. Students are expected to use calculators in class, on homework, during tests, during midterm and final exams and during PARCC tests. Robbinsville High School recommends a [TI84+](#) graphing calculator.

In May, all Algebra 1 students will be required to take and pass the Algebra 1 Partnership for Assessment of Readiness for College and Careers (PARCC) Assessment.

#### **Expectations for the Summer Packet:**

The problems in this packet are designed to help you review topics that are important to your success in Algebra 1. All work must be shown for each problem. The problems should be done correctly, not just attempted.

The packet is due on the first day of school. During the first week of school, concepts in the packet will be reviewed.

***All work should be completed and ready to turn in on the first day of school.***

Fractions: <http://www.showme.com/sh/?h=NCF0t3w>

Order of Operations: <https://goo.gl/qO2VUK>

Rounding: <http://www.showme.com/sh/?h=w8Jkn44>

Evaluating Expressions: <http://www.showme.com/sh/?h=w3kFme8>

Factors: <https://goo.gl/DZnjcS>

Graphing: <http://www.showme.com/sh/?h=iBHI0WW>

Solving Equations: <http://www.showme.com/sh/?h=ujv9Ck4>

Solving Inequalities: <https://goo.gl/gLwqE0>

Word Problems: <https://www.youtube.com/watch?v=DfbQjiSooOo>

# Table of Contents

1. Operations with Fractions	page 3
2. Order of Operations	page 5
3. Rounding Numbers	page 6
4. Evaluating Expressions	page 6
5. Perfect Squares	page 8
6. Finding the Factors of a Number	page 9
7. Graphing	page 10
8. Solving Equations	page 11
9. Solving Inequalities	page 12
10. Word Problems	page 12

# Operations with Fractions

## Adding and Subtracting Fractions



Simplify. DO NOT USE A CALCULATOR FOR THIS SECTION. Show all steps (common denominators).

1.  $\left(-\frac{5}{4}\right) + \frac{12}{7} =$

2.  $\left(-\frac{12}{7}\right) - \left(-\frac{11}{7}\right) =$

3.  $\left(-\frac{3}{5}\right) + \frac{7}{4} =$

4.  $\frac{2}{7} - \left(-\frac{1}{5}\right) =$

5.  $\frac{1}{2} - \frac{8}{5} =$

6.  $4 - \left(-\frac{15}{8}\right) =$

7.  $\frac{7}{5} - \frac{9}{5} =$

8.  $\left(-\frac{2}{7}\right) + \left(-\frac{1}{8}\right) =$

9.  $\left(-\frac{1}{2}\right) - \frac{2}{3} =$

10.  $1 + \left(-\frac{1}{3}\right) =$

### Multiplying and Dividing Fractions

Simplify. **DO NOT USE A CALCULATOR FOR THIS SECTION.** Show all steps (common denominators).

1. $\left(\frac{19}{10}\right)\left(-\frac{1}{2}\right) =$	2. $\left(\frac{1}{9}\right)\left(-\frac{4}{3}\right) =$
3. $\left(-\frac{2}{5}\right)\left(\frac{3}{2}\right) =$	4. $-2\left(-\frac{1}{5}\right) =$
5. $\left(\frac{7}{5}\right)\left(-\frac{3}{5}\right) =$	6. $\left(-\frac{3}{5}\right)\left(\frac{1}{2}\right) =$
7. $\left(\frac{7}{5}\right)\left(-\frac{9}{5}\right) =$	8. $\frac{1}{2} \div -2 =$
9. $\frac{13}{8} \div \frac{-11}{6} =$	10. $-2 \div \frac{3}{2} =$
11. $\frac{1}{5} \div 5 =$	12. $\frac{-4}{9} \div \frac{-7}{9} =$
13. $\frac{1}{7} \div \frac{9}{20} =$	14. $\frac{1}{12} \div \frac{19}{22} =$

## Order of Operations

To avoid having different results for the same problem, mathematicians have agreed on an order of operation when simplifying expressions that contain multiple operations.

1. Perform any operation(s) inside grouping symbols (parentheses, brackets, above or below a fraction bar)
2. Simplify any terms with exponents or roots from left to right
3. Multiply or divide from left to right
4. Add or subtract from left to right



*Simplify using order of operations.*

1. $12 \cdot 5 + 6 \div 6 =$	2. $10(3 - 6^2) + 8 \div 2 =$
3. $32 \div [16 \div (8 \div 2)] =$	4. $180 \div [2 + (12 \div 3)] =$
5. $\frac{5 + [30 - (8 - 1)^2]}{11 - 2^2} =$	6. $5(14 - 39 \div 3) + 4\left(\frac{1}{4}\right) =$
7. $162 \div [6(7 - 4)^2] \div 3 =$	8. $\frac{1}{4}(3 \cdot 8) + 2(-12) =$
9. $\frac{3[10 - (27 \div 9)]}{4 - 7} =$	10. $[8 \cdot 2 - (3 + 9)] + [8 - 2 \cdot 3] =$

## Rounding Numbers



**Round each number to the tenths, hundredths, and thousandths place.**

	TENTHS	HUNDREDTHS	THOUSANDTHS
36.9913			
17.1083			
15.9199			
0.6701			
34.9127			
18.9763			



## Evaluating Expressions

**1. Evaluate each expression if  $a = 3$ ,  $b = 2$ ,  $c = 5$ ,  $d = 1$ ,  $e = 10$ , and  $f = 12$ .**

$e \div c =$	$\frac{f}{c-d} =$	$3e + f =$	$d * d * d * d =$
$\frac{c+e}{a+c+f} =$	$\frac{1}{2}f =$	$\frac{1}{2}c =$	$a \div b =$

$\frac{b * c * e}{a + b} =$	$b * e * e * e * e =$	$3b - 5a =$	$\frac{a}{c} + \frac{d}{e} =$
-----------------------------	-----------------------	-------------	-------------------------------

2. Evaluate each expression if **a = 2, b = 4, c = 1, d = 5, e = 10.**

$\sqrt{e+d+c} =$	$d^a + c^e =$	$\frac{\sqrt{8e+1}}{b^2+3} =$
$\sqrt{98+\sqrt{b}} =$	$b^b =$	$3b + \sqrt{b+d} =$

## Perfect Squares

List the first 20 perfect squares and their square roots.

$1 * 1 = 1$	$\sqrt{1} = 1$
$2 * 2 = 4$	$\sqrt{4} = 2$





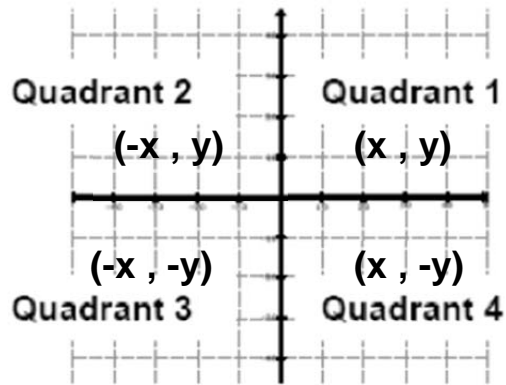

## Finding the Factors of a Number

*Find all the factors of each number, including 1 and itself.*

<b>24</b>	<b>36</b>	<b>72</b>	<b>-12</b>
<b>8</b>	<b>-6</b>	<b>5</b>	<b>15</b>
<b>45</b>	<b>27</b>	<b>34</b>	<b>51</b>

# Graphing

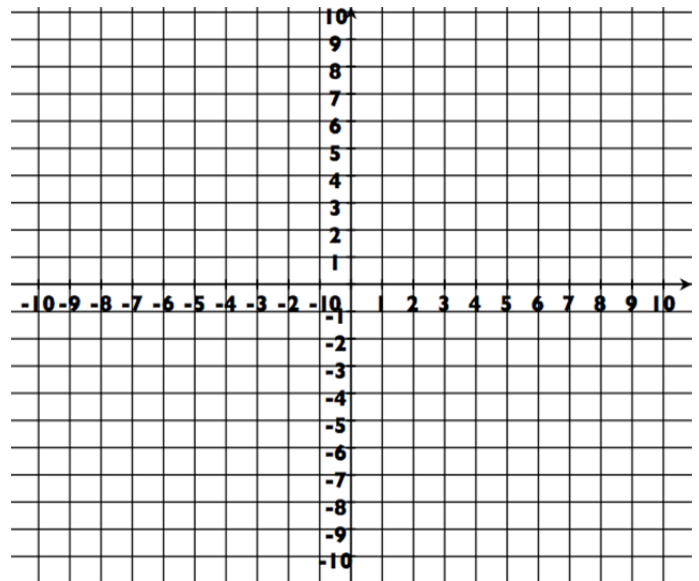
The x-y plane is divided into four quadrants (four sections) as described below.



Plot each function on the graph using the table of values.

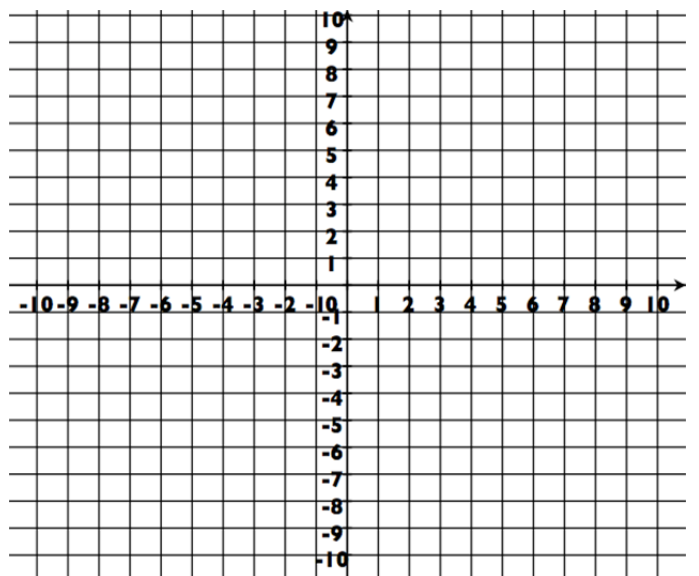
$$y = -\frac{2}{3}x + 8$$

x	y
-3	
-1	
0	
1	
3	



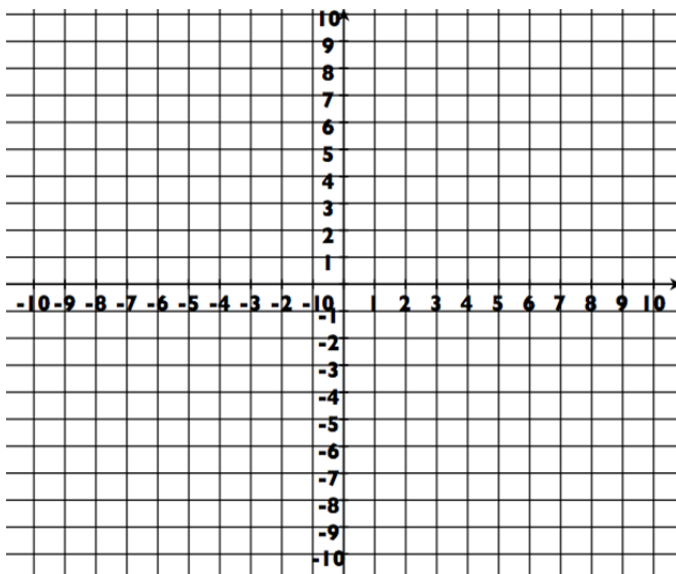
$$y = x^2 - 3$$

x	y
-4	
-2	
0	
2	
4	



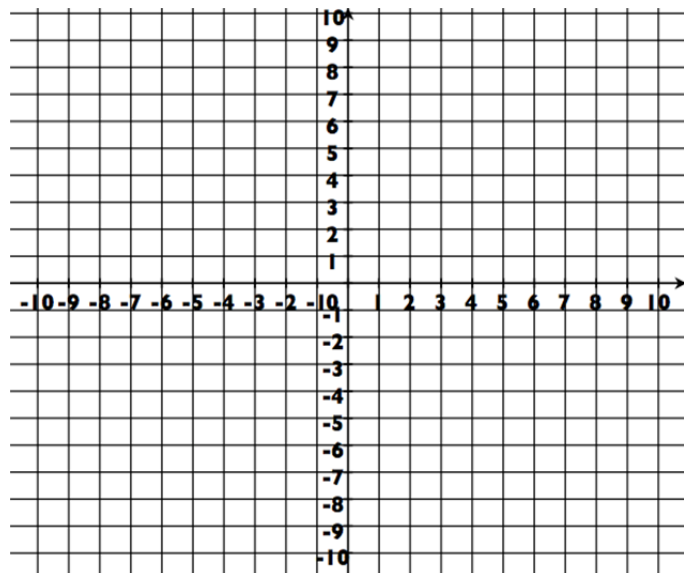
$$y = 2x - 5$$

x	y
0	
1	
2	
3	
4	



$$y = x + \frac{1}{2}$$

x	y
-4	
-2	
0	
2	
4	



## Solving Equations

*Solve each equation for the unknown.*

1.  $5 = 2x - 3$






2.  $2m - 4 = 7$

3.  $\frac{1}{2}x + 6 = 18$

4. $-2(s - 3) = -1$	5. $-(x + 4) = 2$	6. $2t + \frac{3}{4} = 1$
---------------------	-------------------	---------------------------

## Solving Inequalities

**Solve each inequality and graph the solutions on a number line.**

<p>1. <math>4x - 8 &lt; 16</math></p> 	<p>2. <math>\frac{1}{2}n + 3 \geq 9</math></p>  
<p>3. <math>3 - (4v + 6) &gt; 9</math></p> 	<p>4. <math>18 \leq -9y</math></p> 

## Word Problems

**Key Words for Translations:**

ADD	SUBTRACT	MULTIPLY	DIVIDE	INEQUALITIES	VARIABLE	=
Plus	Decreased	Per	One-third	< is less than	A number	Same as
Sum	Smaller	For every	Quotient	> is greater than	Some number	Equals
Longer than	Less than	For each	Divided by	≤ is less than or equal to	Quantity	Is
Greater than	Difference	Triple	Each part	≥ is greater than or equal to		Total
Together	Reduced	Multiplied	Half as much			Was
Total	Differ	Of	Split equally			Result
Increased	Fewer	Times				Outcome
More than	Shorter than	Twice				Answer
In all	Minus	Double				
Add	Diminished					

Translate each word problem into algebraic equation, using  $x$  for the unknown, and solve.

Steps:

**Step 1:** Write a “let  $x =$ ” statement for each unknown

**Step 2:** Write an equation

**Step 3:** Solve the equation

**Step 4:** Substitute the value for  $x$  into the “let” statement(s) to answer the question

*Solve each word problem using the methodology stated above.*

1. A video store charges a one-time membership fee of \$12.00 plus \$1.50 per video rental. How many videos can Sarah rent if she spends \$21?



2. Bicycle City makes custom bicycles. They charge \$160 plus \$80 for each day that it takes to build the bike. If you have \$480 to spend on your new bicycle, how many days can it take Bicycle City to build your bike?

3. Jen weighs 20 pounds more than Anna. If the sum of their weights is 250 pounds, how much does each girl weigh?

4. The current price of a school t-shirt is \$10.58. Next year the cost of a t-shirt will be \$15.35. How much will the t-shirt increase next year?

5. Sam drove 3 hours more than Michael on their trip to Texas. If the trip took 37 hours, how long did Sam and Michael each drive?

6. Twice a number decreased by 15 is equal to -27. What is the number?

7. Three less than the sum of four times a number and six is eight. Find the number.

8. Four more than half of a number is at least nine. What is the number?