Lawrence High School

Math Department

Summer Review

For Students Entering

Algebra 1

Please show your work on the following problems. This packet will be collected by your math teacher so don't forget to bring your finished work back with you in August. If you need assistance on a topic check out: https://www.wolframalpha.com/, https://www.khanacademy.org/, http://www.purplemath.com/, or google the topic.

Fractions:

Multiply Fractions.

1. $\frac{1}{2} \cdot \frac{5}{6}$
2. $\frac{4}{11} \cdot \frac{3}{2}$
3. $3 \cdot \frac{3}{6}$
4. $\left(\frac{2}{7}\right)\left(\frac{4}{9}\right)$
5. $\left(\frac{7}{2}\right)\left(\frac{1}{3}\right)$
6. $\left(\frac{1}{4}\right)(7)$

Divide Fractions.

7. $\frac{1}{2} \div \frac{5}{6}$
8. $\frac{4}{11} \div \frac{3}{2}$
9. $3 \div \frac{3}{6}$
10. $\frac{1}{6} \div \frac{1}{4}$
11. $\frac{3}{4} \div \frac{1}{5}$
12. $5 \div \frac{2}{7}$

Add Fractions.

13. $\frac{8}{9} + \frac{7}{9}$
14. $\frac{3}{4} + \frac{5}{6}$
15. $\frac{3}{7} + 5$
16. $\frac{2}{9} + \frac{2}{3}$
17. $\frac{3}{5} + \frac{4}{10}$
18. $\frac{4}{5} + 2$

Subtract Fractions.

19. $\frac{8}{11} - \frac{2}{5}$
20. $\frac{2}{12} - \frac{3}{2}$
21. $3 - \frac{1}{7}$
22. $\frac{2}{9} - \frac{10}{5}$
23. $\frac{18}{5} - \frac{4}{5}$
24. $\frac{4}{5} - 2$

Integer Operations:

Add, subtract, multiply, or divide the integers without using a calculator.

1. $7 + 5$
2. $(6)(-7)$
3. $-9 - 5$
4. $8 + (-7)$
5. $\frac{-14}{7}$
6. $(-4)(-5)$
7. $8 - 3$
8. $\frac{-20}{-5}$
9. $5 \cdot 0$
10. $-4 + (-5)$
11. $15 - (-5)$
12. $-1 \cdot 10$
13. $-3 + 5$
14. $\frac{6}{6}$
15. $3 - 7$
16. $\frac{18}{-3}$
17. $-6 + (-16)$
18. $\frac{0}{9}$
19. $-9 - (-16)$
20. $-4 + (-16)$

Order of Operations:

Evaluate each expression without using a calculator.

1. $8 \cdot 17 \div 5 - 2$
2. $14 \div 7 - 2 + (8 + 13)$
3. $3^2 + (20 \div 10 + 3^2)$
4. $(9 - 7) - (16 \div 8)^2$
5. $0.7 + 0.3 \cdot (3 + 4)^2$
6. $12 + \left((13 - 6) + 5^2\right)$

Evaluate Expressions:

Evaluate the expressions for the given values.

1. $16t + 11r$ when $t = -2$ and $r = -3$

2. $3m - n^2$ when $m = 4$ and $n = 5$

3. $h^2 - k$ when $h = -9$ and $k = -1$

4. $a + (18 - a) \cdot b$ when $a = 4$ and $b = 1$

5. $2c^2 + 3d + 6$ when $c = 2$ and $d = 9$

6. $3x - 2x^2 + 10$ when $x = -4$

7. $\frac{2x^2}{x}$ when $x = 5$

8. $\frac{x + 2}{-y}$ when $x = -3$ and $y = 4$

Distributive Property:

Use the Distributive Property to simplify the expression.

1. $10(h - 1)$

2. $-(w + 16)$

3. $-2(w - 11)$

Combine Like Terms: Examples of combining like terms:

$16c + 2(8 - 7c)$

$16c + 16 - 14c$ Distributive Property

$2c + 16$ Combine like terms

Notice: 2c + 16 **DOES NOT** become 18c.

Simplify each Expression.

1. $-5a - 14a$

2. $33s - 12s$

3. $k + 11(3k - 5)$

4. $-5(3b + 4) - 6(3 + 6b)$

5. $4(-3a + 13) + 3(a + 4)$

6. $-11x - (9 - 7x)$

Solving Equations:

Examples of solving equations.

$x + 3 = 5$

$-3 \quad -3$

$x + 0 = 2$

$x = 2$

$-7m = 56$

$\frac{-7m}{-7} = \frac{56}{-7}$

$m = -8$

$\frac{y}{8} = 3$

$\frac{y}{8} \cdot 8 = 3 \cdot 8$

$y = 24$

Solve the following equations for the variable.

1. $x + 12 = 37$

2. $54 = y - 12$

3. $16r = 48$

4. $-x = 5$

5. $\frac{m}{4} = 8$

6. $\frac{1}{8}h = 3$

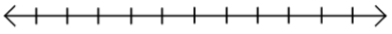
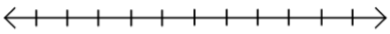
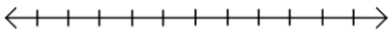
Inequalities:

Use < or > to compare the two numbers.

1. -16 _____ 16 2. -2 _____ -5 3. -59 _____ -60 4. -8.6 _____ -8.63

Graph each inequality on the number line.

5. $x \geq 3$ 6. $-6 > x$ 7. $x \leq -1$

Absolute Value:

Find the absolute value of each number.

1. $|-10|$ 2. $|4|$ 3. $|0|$ 4. $|-3|$

Simplify the expressions.

5. $|12| + |-12|$ 6. $|-36| - |-5|$ 7. $-|4| - |6|$

Greatest Common Factor:

Find the GCF (greatest common factor) of each set of numbers.

Example: Greatest Common Factor (GCF)

20: 1, 2, 4, 5, 10, 20
28: 1, 2, 4, 7, 14, 28

Hint: Factors are numbers that multiple to be the given number.

1. $5\ and\ 35$ 2. $9\ and\ 8$ 3. $14\ and\ 10$

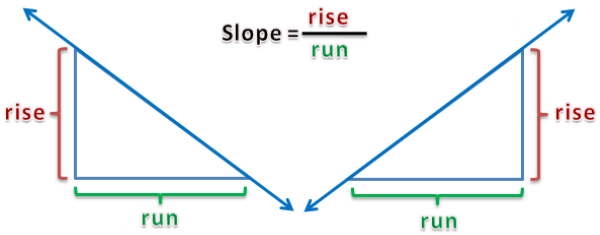
4. $16\ and\ 48$ 5. $24\ and\ 64$ 6. $3, 15, and\ 18$

Slope:

Slope = $\frac{y_2-y_1}{x_2-x_1}$

Example
(-6 , 5) and (2 , 4)
(X_1,Y_1) (X_2,Y_2)

$$m = \frac{y_2-y_1}{x_2-x_1} = \frac{4-5}{2--6} = \frac{-1}{8}$$

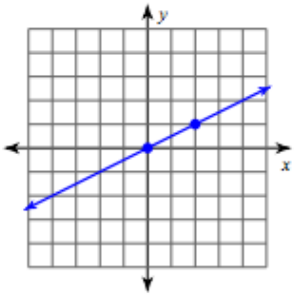


Find the slope given two points.

1. $(2,4)\ and\ (5,7)$
2. $(0,-2)\ and\ (3,4)$
3. $(7,-2)\ and\ (-5,-2)$

Find the slope given each graph.

4.



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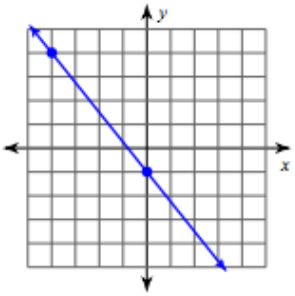

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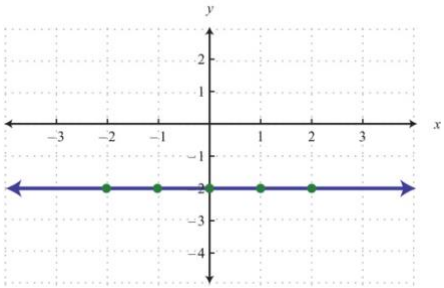

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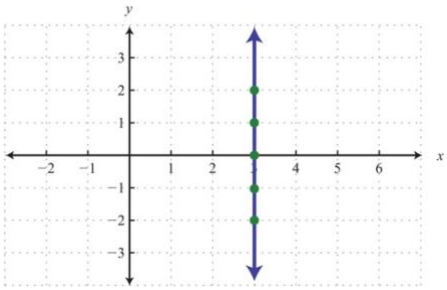
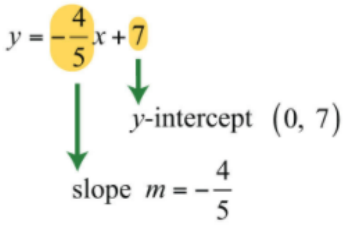


Slope-Intercept Form: $y = mx + b$ where m is the slope and (0, b) is the y-intercept.

Identify the slope and y-intercept in each equation.

Example:



1. $y = \frac{1}{6}x - 12$
2. $y = 3x + 10$
3. $y = -\frac{1}{4}x - 3$
4. $y = \frac{-2}{9}x$
5. $y = x - 5$
6. $y = -x + 1$

Word Problems:

1. You had \$154 in your savings account on January 20th. On January 25th, you deposited \$24. You withdrew \$89 on January 30th. You deposited \$46 on February 1st. Do you have enough money in your account to withdraw \$110 on February 3rd? Write and solve an equation to answer this problem.

2. The temperature at the beach was 98°F at 2pm. By 6pm the temperature dropped to 67°F. Write and solve an equation to find the change in temperature.

3. An airplane was at a cruising altitude, then descended 2,000ft. The airplane is at 18,000ft now. Write and solve an equation to find the cruising altitude before the descent.

4. You have saved \$29.16 more than you need to purchase the latest video game that costs \$57.25. Write and solve an equation to find how much you had before buying the game.

5. You are currently 14 years old and four times younger than your neighbor. Write and solve an equation to find your neighbor's age.

6. You want to buy a \$32 pair of shoes. You have \$70 to spend. Write and solve an equation to find the money you have left after this purchase.