

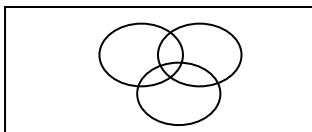
## Leon County Schools - Summer Math Practice

For students entering Liberal Arts, Geometry, or Algebra II

Work the following sets of problems over the summer. **Be sure to show all your work on a separate sheet of paper.** Remember: **NO** calculators should be used for any of these problems. Do Sets 1 and 2 in June, Sets 3 and 4 in July, and Sets 5 and 6 in August. **Be prepared to turn in these assignments to your math teacher next school year when they are requested in August.**

### Set 1

1. Write an algebraic expression for *five more than twice the cube of a number*.
2. Write an algebraic expression for *the product of two and the sum of four and twice a number*.
3. Evaluate  $4(2 + 3 \cdot 5) - 3^2$ , using Order of Operations.
4. If  $x = 3$  and  $y = -7$ , then the value of  $3x - 5y$  is:
5. State the property shown by  $3 \times 1 = 3$ .
6. What property is illustrated by  $(x + 5) + 7 = 7 + (x + 5)$
7. Simplify  $35 - 7(3z - 2)$ .
8. Write 0.15 as a percent & a fraction.
9. Write 3% as a decimal & fraction.
10. Write 0.32 as a fraction in lowest terms.
11.  $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$   
 $A = \{1, 3, 5, 7\}$ ,  
 $B = \{3, 4, 7\}$  and  
 $C = \{2, 3, 4, 6\}$   
Draw a Venn Diagram showing these sets.



### Set 2

1. **Solve the equation**  
 $5x + 3y = -15$ , for  $x$  if  $y = 0$ .
2. Find the  $x$ -intercept and  $y$ -intercept for this equation  
 $6x - y = -12$ .
3. Determine the equation of the line with slope  $-3$  and containing  $(-7, 2)$ .
4. Given the following, write an equation in standard form. The line has  $y$ -intercept  $5$  and slope  $2$ .
5. Write the equation of the line in slope-intercept form if it contains  $(-1, 2)$  and  $(5, -4)$ .
6. Write an equation slope-intercept form of the line that is parallel to the graph of  $3y - 4x = 1$  and passes through  $(0, 6)$ .
7. Write the equation in standard form for the line that is perpendicular to the graph of  $y = 5x + 1$  and has a  $y$ -intercept of  $4$ .
8. Write the equation of the vertical line that contains  $(-5, -4)$ .
9. Find the slope for the equation  $x - 2y = 6$ .
10. For the equation  $x - 2y = 6$ , is the point  $(4, -1)$  on the line?
11. Bryson went to lunch. His sandwich choices were ham, turkey, chicken. Drink choices were coke, sprite, water, and tea. Write  $S$  (set of sandwiches)
12. Write  $D$  (set of drinks)
13. Find  $S \times D$ .

### Set 3

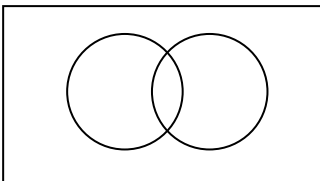
1. Solve  $\frac{3}{2}x + 4 = -9$
2. Solve  
 $2(3x - 7) + 4x = 26$
3. Solve  
 $4 - 3x = 5 - 6x - 7$
4. Write & solve the equation described: 11 times the quantity  $y$  minus 3 is 5.
5. Solve and graph on a number line.  $5 - 3x < 14$
6. Solve  $\frac{x}{x + 2} = \frac{3}{7}$
7. A brownie recipe that makes 36 brownies calls for  $1\frac{1}{2}$  cups of sugar. How many cups of sugar are needed to make 24 brownies?
8. Solve this system of equations:  $y = 2x + 5$  and  $3x - 2y = 10$
9. Solve this system of equations:  $6x - 3y = 11$  and  $6x + 3y = 17$
10. Solve this system of equations:  $3x + 5y = 22$  and  $4x + 3y = 11$
11.  $T = \{1, 3, 5, 7, 9\}$  and  $H = \{3, 8, 9, 12, 14\}$  then what is  $T \cap H$ ?
12. What is  $T \cup H$ ?
13. What is the product of the sets  $T \times H$ ?

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## Set 4

1. Write an example of a quadratic trinomial?
2. Perform the indicated operations:  
 $(7x^3 - 5x + 2) - (5x^3 - 4x^2 + 6x - 7)$
3. Multiply  
 $6x^2(5x - 3)$
4. Multiply  
 $(5a - 3)(2a + 4)$
5. Simplify  
 $(3x^2)(-2x^5)$
6. Simplify  $(5ab^3)^2$
7. Simplify  
 $(4a^3)^2(3a)^2$
8. Simplify  $\frac{10x^5y^4}{15x^3y^9}$
9. Multiply  $(x - 3)^2$
10. Multiply  
 $(a - 4)(a + 4)$
11. In a class of 50 students, 17 take Band, 22 take Chorus, and 3 take both Band & Chorus. How many students in the class are not enrolled in either Band or Chorus? Use the Venn Diagram to solve.



## Set 5

1. Factor completely:  
 $x^2 - 7x - 30$
2. Factor completely:  
 $x^2 + 4x - 16$
3. Factor completely:  
 $2x^2 - 11x + 5$
4. Factor completely:  
 $4x^2 + 20x - 24$
5. Factor completely:  
 $4m^2 - 9$
6. Factor completely:  
 $16a^2 - 25b^2$
7. Solve by factoring:  
 $x^2 - x - 12 = 0$
8. Solve by factoring:  
 $2c^2 - 5 = -9c$
9. Solve the equation  
 $(x + 6)(x - 7)(x - 8)(x + 9) = 0$
10. Find the dimensions of the rectangle if the width is 3 feet less than the length and the area is 40 ft<sup>2</sup>.
11.  $A = \{3, 4, 5, 8, 9, 12\}$   
 $B = \{1, 2, 4, 7, 8, 10\}$   
Find  $A \cup B$ .
12. Find  $\sim(A \cap B)$
13. Create a Universal Set for sets A and B.

## Set 6

1. Simplify:  
 $\frac{3x}{x+4} - \frac{x+5}{x+4}$
2. Simplify:  
 $\frac{6x}{5y} \cdot \frac{10y}{8x}$
3. Simplify:  $\sqrt{50x^7y^4}$
4. Simplify:  $\sqrt{\frac{5}{3}}$
5. Express in simplest form:  
 $\frac{6\sqrt{24}}{\sqrt{9}}$
6. Express in simplest form:  $\sqrt{48}$
7. Simplify:  $\frac{24}{\sqrt{12}}$
8. Simplify:  
 $7\sqrt{28} + 3\sqrt{63}$
9. Solve by the quadratic formula:  
 $2x^2 + 10x + 25 = 9$
10. Solve:  
 $x^2 + 10x + 25 = 9$
11.  $U = \{0, 1, 2, 3, \dots, 19, 20\}$   
 $M = \{4, 5, 7, 8, 12, 14, 18\}$   
 $P = \{0, 2, 3, 8, 9, 10, 15, 20\}$   
Draw a Venn Diagram for this.

