Leon County Middle Schools - Summer Math Practice – Students entering 8th Grade Geometry

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. ***Suggestion***: 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 for a grade.**

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 $4(2+3\bullet 5)-3^2$, using Order of Operations.

4. If $x=3$ and $y=-7$, then the value of: **$3x^2 - 5y$**

5. State the property shown by $3\times 1=3$.

6. What property is illustrated by $(x+5)+7=7+(x+5)$

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 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. Write $0.\overline{6}$ as a fraction in lowest terms.

12. Solve:
$-4x + 9y = 9$
$x - 3y = -6$

13. Write an equation slope-intercept form of the line that is parallel to the graph of 3y – 4x = 1 and passes through (0, 6).

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) & (5,-4).

6. Factor each completely
$4n^2 - 17n + 4$

7. Simplify:
35 – 7(3m -2)

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. Solve:
$3x - 2y = 2$
$5x - 5y = 10$

12. Factor each completely
$2k^2 + 22k + 60$

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. Solve each equation by factoring:

$n^2 + 3n - 12 = 6$

12. Factor each completely

$2n^2 + 5n + 2$

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 $(5a\,b^3)^2$

7. Simplify $(4a^3)^2(3a)^2$

8. Simplify $\dfrac{10x^5y^4}{15x^3y^9}$

9. Multiply $(x - 3)^2$

10. Multiply $(a - 4)(a + 4)$

11. Solve:
$x^2 + 10x + 25 = 9$

12. Solve. Check for extraneous solutions.
$$\frac{1}{2n^2} + \frac{5}{2n} = \frac{n-2}{n^2}$$

13. Draw a box-and-whisker plot for each data set.

26	26.1	27.2	27.6
28.9	30.2	30.6	31.1
31.5	32.1	33.4	34 34
34	36.7	45	

Set 5

1. Factor completely:
$x^2 - 7x - 30$

2. Factor completely:
$x^2 + 4x - 16$

3. Simplify: $\sqrt{\dfrac{5}{3}}$

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 ft².

11. Solve the equation by using the quadratic formula:

$2m^2 - 7m - 13 = -10$

12. Simplify:
$$\frac{6x}{5y} \bullet \frac{10y}{8x}$$

Set 6

1. Simplify:
$$\frac{3x}{x+4} - \frac{x+5}{x+4}$$

2. Simplify: $\sqrt{50x^7y^4}$

3. Express in simplest form:
$$\frac{6\sqrt{24}}{\sqrt{9}}$$

4. Express in simplest form: $\sqrt{48}$

5. Simplify: $\dfrac{24}{\sqrt{12}}$

6. Simplify:
$7\sqrt{28} + 3\sqrt{63}$

7. Solve by the quadratic formula:
$2x^2 + 10x + 25 = 9$

8. Simplify:

$$\frac{x+7}{7x+35} \cdot \frac{x^2 - 3x - 40}{x - 8}$$

9. Solve the equation by factoring:

$-4k^2 - 8k - 3 = -3 - 5k^2$

10. Find the mode, median, mean, lower quartile, upper quartile, interquartile range, and population standard deviation for each data set:

37	42	48	51	52
53	54	54	55	