

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.

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 $y = -7$, find 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 0.15 as a percent & a fraction.
8. Write 3% as a decimal & fraction.
9. Write 0.32 as a fraction in lowest terms.
10. Write $0.\bar{6}$ as a fraction in lowest terms.
11. Solve:
 $-4x + 9y = 9$
 $x - 3y = -6$

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 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 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 the equation by factoring:
 $n^2 + 3n - 12 = 6$
12. Factor each completely
 $2n^2 + 5n + 2$

Set 4

- Write an example of a quadratic trinomial?
- Perform the indicated operations:
 $(7x^3 - 5x + 2) - (5x^3 - 4x^2 + 6x - 7)$
- Multiply
 $6x^2(5x - 3)$
- Multiply
 $(5a - 3)(2a + 4)$
- Simplify
 $(3x^2)(-2x^5)$
- Simplify $(5a b^3)^2$
- Simplify $(4a^3)^2(3a)^2$
- Simplify $\frac{10x^5y^4}{15x^3y^9}$
- Multiply $(x - 3)^2$
- Multiply $(a - 4)(a + 4)$
- Solve:
 $x^2 + 10x + 25 = 9$
- Solve. Check for extraneous solutions.
 $\frac{1}{2n^2} + \frac{5}{2n} = \frac{n - 2}{n^2}$
- 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

- Factor completely:
 $x^2 - 7x - 30$
- Factor completely:
 $x^2 + 4x - 16$
- Simplify: $\sqrt{\frac{5}{3}}$
- Factor completely:
 $4x^2 + 20x - 24$
- Factor completely:
 $4m^2 - 9$
- Factor completely:
 $16a^2 - 25b^2$
- Solve by factoring:
 $x^2 - x - 12 = 0$
- Solve by factoring:
 $2c^2 - 5 = -9c$
- Solve the equation
 $(x + 6)(x - 7)(x - 8)(x + 9) = 0$
- Find the dimensions of the rectangle if the width is 3 feet less than the length and the area is 40 ft².
- Solve the equation by using the quadratic formula:
 $2m^2 - 7m - 13 = -10$
- Simplify:
 $\frac{6x}{5y} \cdot \frac{10y}{8x}$

Set 6

- Simplify:
 $\frac{3x}{x + 4} - \frac{x + 5}{x + 4}$
- Simplify: $\sqrt{50x^7y^4}$
- Express in simplest form:
 $\frac{6\sqrt{24}}{\sqrt{9}}$
- Express in simplest form: $\sqrt{48}$
- Simplify: $\frac{24}{\sqrt{12}}$
- Simplify:
 $7\sqrt{28} + 3\sqrt{63}$
- Solve by the quadratic formula:
 $2x^2 + 10x + 25 = 9$
- Simplify:
 $\frac{x + 7}{7x + 35} \cdot \frac{x^2 - 3x - 40}{x - 8}$
- Solve the equation by factoring:
 $-4k^2 - 8k - 3 = -3 - 5k^2$
- 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

Summer Math Practice – Algebra 1

This summer math worksheet is for all students entering a high school level Algebra 1 class. Work the following problems over the summer. Be sure to show ALL your work neatly on a separate sheet of paper.
NO Calculators should be used on this worksheet.

Set 1

- $3\frac{1}{2} + 5\frac{2}{3}$
- $4.6 - 3.98$
- $-3 \cdot 4 + 6 - 4 \div 2$
- Evaluate: $-5|k+1|$
when $k = -11$
- Simplify: $\frac{36}{40}$
- Solve: $\frac{n}{6} = \frac{3}{8}$
- Write $\frac{7}{10}$ as a percent
- Solve: $85 + a = 150$
- Solve: $6x + 8 = 50$
- Find the GCF and LCM of 15 and 60
- Find the prime factorization of 56
- Estimate to the nearest whole number
 $3\frac{1}{5} + 9\frac{2}{10}$
- Find the area and perimeter of a square with sides of 3 inches
- Write an algebraic expression for:
“the sum of 32 and x”
- What is 25% of 32?
- Simplify: $\sqrt{9} + \sqrt{4}$
- Simplify: $3 + 4(2+1)^2$
- Solve: $-3 = \frac{n}{-6} + 9$
- Place the following *Real* numbers in order from least to greatest
 $\{\frac{1}{3}, \frac{1}{2}, 0.7, 0, -5, -2\}$
- List the first four (non-zero) multiples of 5

Set 2

- $8 - 4\frac{2}{7}$
- $(4.23)(1.6)$
- $6 + 18 \div (-3)$
- Evaluate: $4v^3$ when
 $v = -5$
- Simplify: $\frac{5}{30}$
- Solve: $\frac{15}{10} = \frac{3}{k}$
- Write $\frac{5}{8}$ as a decimal
- Solve: $u - 18.4 = 39$
- Solve: $\frac{d}{10} - 20 = 16$
- Find the GCF and LCM of 8 and 20
- Simplify: $2^3 \cdot 3 \cdot 5^2$
- Estimate (to the nearest dollar): $\$7.91 - \2.05
- Find the area and perimeter of a right triangle having legs of 3 cm and 4 cm and a hypotenuse of 5 cm
- Write an algebraic expression for “the quotient of 5 and x”
- 20% of what is 14?
- Simplify: $\sqrt{49} - \sqrt{25}$
- Simplify: $25 - 2(3)^2$
- Solve: $\frac{x-6}{3} = -12$
- Place the following *Real* numbers in order from least to greatest.
 $\{-\frac{3}{4}, \frac{-4}{3}, 1, \frac{3}{4}, 0\}$
- What is the “rule” to see if a number is divisible by nine?

Set 3

- Multiply: $1\frac{3}{7} \cdot 2\frac{4}{5}$
- Divide: $27 \div 0.3$
- Simplify: $\frac{5(6-2)}{2(4+3)}$
- Simplify: $2^3 + |7-9|$
- Simplify: $\frac{56}{84}$
- At 60 mph a car travels 88 feet per second. How many feet per second does a car travel at 15 mph?
- Write 60% as a fraction
- Solve: $\frac{m}{5} = 30$
- Solve: $5x - 1.5 = 0$
- Find the GCF and LCM of 6 and 9
- Write the prime factorization of 120
- Estimate 39.46 to the nearest integer
- Find the area and circumference of a circle with radius 5 cm. (use $\pi \approx 3.14$)
- Write an algebraic expression for “x subtracted from 8”
- 6 is what percent of 4?
- Simplify: $\frac{\sqrt{36}}{\sqrt{4}}$
- Simplify: $3 + 9^2 \div 3$
- Solve: $3n - 7 = -19$
- Place the following *Real* numbers in order from least to greatest:
 $\{-1.2, 3.5, \frac{-4}{5}, \frac{1}{2}, -\frac{6}{3}\}$
- How many factors does 24 have?