

SUMMER MATH PACKET FOR STUDENTS RISING TO GEOMETRY

Provided by Cox Math Tutoring

Directions: Complete the following problems without the use of a calculator, unless the problem is accompanied

by a calculator icon:



1. Solve the following linear equations.

1.1. $-12 = 3 - 2k - 3k$

$$k = 3$$

$24 = 6(-x - 3)$

$$x = -7$$

1.2. $6 = -3(x + 2)$

$$x = -4$$

$12(2k + 11) = 12(2k + 12)$

no solution

1.3. $-16 + 5n = -7(-6 + 8n) + 3$

$$n = 1$$

$-12(x - 12) = -9(1 + 7x)$

$$x = -3$$

1.4. $-10n + 3(8 + 8n) = -6(n - 4)$

$$n = 0$$

$-11 + 10(p + 10) = 4 - 5(2p + 11)$

$$p = -7$$

2. Find the slope-intercept equation of the line:

2.1. $3x - 2y = 16$

$$\begin{aligned} -2y &= -3x + 16 \\ y &= \frac{3}{2}x - 8 \end{aligned}$$

2.2. through (1, 2); slope = 7

$$y - 2 = 7(x - 1)$$

$$y = 7x - 5$$

2.3. through (4, 2); parallel to the line $y = -\frac{3}{4}x - 5$

$$y - 2 = -\frac{3}{4}(x - 4)$$

$$y = -\frac{3}{4}x + 5$$

2.4. through (20, 8) and (9, 16)

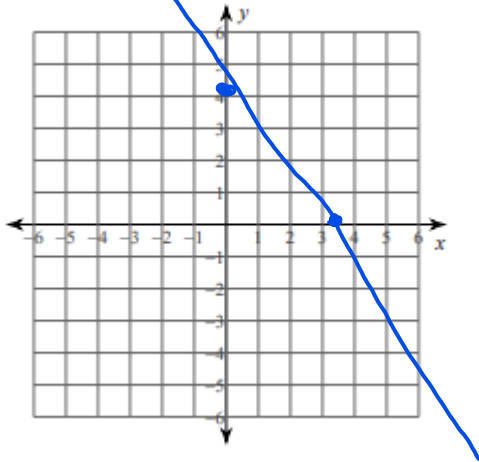
$$m = \frac{16 - 8}{9 - 20} = \frac{8}{-11}$$

$$y - 8 = -\frac{8}{11}(x - 20)$$

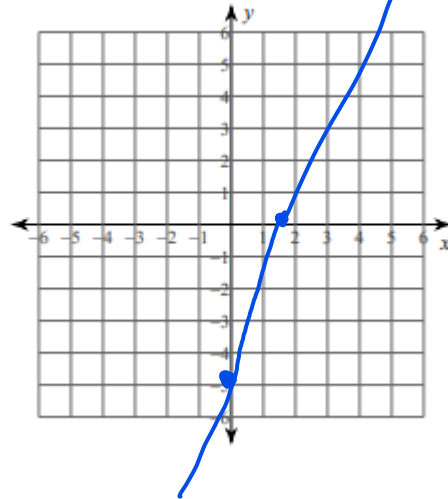
$$y = -\frac{8}{11}x + \frac{248}{11}$$

3. Sketch the graph of each line.

3.1. $6x + 5y = 20$



$10x - 3y = 15$



4. Solve the following proportions.

4.1. $\frac{4}{n+2} = \frac{7}{n}$

$$4n = 7(n+2)$$

$$n = -\frac{14}{3}$$

4.2. $\frac{n}{n-3} = \frac{2}{3}$

$$3n = 2(n-3)$$

$$n = -6$$

4.3. $\frac{x-3}{x} = \frac{9}{10}$

$$10(x-3) = 9x$$

$$x = 30$$

4.4. $\frac{5}{r-9} = \frac{8}{r+5}$

$$5(r+5) = 8(r-9)$$

$$r = \frac{97}{3}$$

5. Multiply.

5.1. $-4x(x^2 - 5x + 7)$
 $-4x^3 + 20x^2 - 28x$

5.3. $(x - 4)^2$
 $(x - 4)(x - 4) = x^2 - 8x + 16$

5.2. $(y - 7)(y - 4)$
 $y^2 - 11y + 28$

5.4. $(5x + 2)^2$
 $25x^2 + 20x + 4$

6. Factor completely

6.1. $4k^2 + 20k - 96$
 $4(k^2 + 5k - 24)$
 $4(k + 8)(k - 3)$

6.3. $6x^2 - 45x + 21$
 $3(2x^2 - 15x + 7)$
 $3(2x - 1)(x - 7)$

6.5. $9x^2 - 25$
 $(3x + 5)(3x - 5)$

6.7. $x^2 + 13x + 30$
 $(x + 10)(x + 3)$

6.2. $6n^2 + 42n - 48$
 $6(n^2 + 7n - 8)$
 $6(n - 1)(n + 8)$

6.4. $4x^2 - 1$
 $(2x + 1)(2x - 1)$

6.6. $b^2 - 19b + 90$
 $(b - 10)(b - 9)$

7. Use the zero product property to solve each equation.

7.1. $(x - 4)(x - 3) = 0$
 $x - 4 = 0$ $x - 3 = 0$
 $x = 4$ $x = 3$

7.2. $x(x + 13) = 0$
 $x = 0$ $x + 13 = 0$
 $x = -13$

8. Solve each quadratic equation by factoring.

8.1. $x^2 + 2x - 15 = 0$

$$(x+5)(x-3) = 0$$

$$x = -5 \quad x = 3$$

8.2. $x^2 - 5x - 6 = 0$

$$(x-6)(x+1) = 0$$

$$x = 6 \quad x = -1$$

9. Solve using square roots.

9.1. $x^2 = 64$

$$x = \pm 8$$

9.2. $(x-2)^2 = 900$

$$x-2 = \pm 30$$

$$\begin{array}{r} x-2 = 30 \\ +2 \quad +2 \\ \hline x = 32 \end{array}$$

$$\begin{array}{r} x-2 = -30 \\ +2 \quad +2 \\ \hline x = -28 \end{array}$$

10. Name the angle relationship: complementary, supplementary, vertical, or adjacent.



10.1.

Supplementary



10.2.

Vertical



10.3.

Complementary



10.4.

adjacent