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Pre- alg- ebra

APPENDIX A

Answers to Cumulative Review

Chapter 1: Whole Numbers

No exercises.

Chapter 2: The Language of Algebra

Simplify

$$5(3 + 2 \cdot 6) - 8^2$$

Answer: 11

Solve

$$17 = y - 13$$

Answer: $y = 30$

$$p + 14 = 23$$

Answer: $p = 9$

Translate into an algebraic expression

11 less than the product of 7 and x

Answer: $7x - 11$

Translate into an algebraic equation and solve

Twice the difference of y and 7 gives 84

Answer: $2(y - 7) = 84$; $y = 49$

Find all the factors of 72.

Answer: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

Find the prime factorization of 132.

Answer: $2 \cdot 2 \cdot 3 \cdot 11$

Find the least common multiple of 12 and 20.

Answer: 60

Chapter 3: Integers

Simplify

$$|8 - 9| - |3 - 8|$$

Answer: -4

$$-2 + 4(-3 + 7)$$

Answer: 14

$$27 - (-4 - 7)$$

Answer: 38

$$28 \div (-4) - 7$$

Answer: -14

Translate into an algebraic expression or equation

The sum of -5 and 13 , increased by 11

Answer: $(-5 + 13) + 11$

The product of -11 and 8

Answer: $-11 \cdot 8$

The quotient of 7 and the sum of -4 and m

Answer: $\frac{7}{-4 + m}$

The product of -3 and y is -51 .

Answer: $-3y = -51$

Solve

$$-6r = 24$$

Answer: $r = -4$

Chapter 4: Fractions

Locate the numbers on a number line. $\frac{7}{8}$, $\frac{5}{3}$, $3\frac{1}{4}$, 5



Simplify

$$\frac{21p}{57q}$$

Answer: $\frac{7p}{19q}$

$$\frac{3}{7} \cdot \left(-\frac{28}{45}\right)$$

Answer: $-\frac{4}{15}$

$$-6\frac{3}{4} \div \frac{9}{2}$$

Answer: $-\frac{3}{2}$

$$-3\frac{3}{5} \div 6$$

Answer: $-\frac{3}{5}$

$$-4\frac{2}{3} \left(-\frac{6}{7}\right)$$

Answer: 4

$$\frac{-2\frac{1}{4}}{-\frac{3}{8}}$$

Answer: 6

$$\frac{7 \cdot 8 + 4(7 - 12)}{9 \cdot 6 - 2 \cdot 9}$$

Answer: 1

$$-\frac{23}{36} + \frac{17}{20}$$

Answer: $\frac{19}{90}$

$$\frac{\frac{1}{2} + \frac{1}{3}}{\frac{3}{4} - \frac{1}{3}}$$

Answer: 2

$$3\frac{5}{8} - 2\frac{1}{2}$$

Answer: $1\frac{1}{8}$

$$-\frac{2}{3}r = 24$$

Answer: $r = -36$

Chapter 5: Decimals

Simplify

$$24.76 - 7.28$$

Answer: 17.48

$$12.9 + 15.633$$

Answer: 28.533

$$(-5.6)(0.25)$$

Answer: -1.4

$$\$6.29 \div 12$$

Answer: $\$0.52$

$$\frac{3}{4}(13.44 - 9.6)$$

Answer: 2.88

$$\sqrt{64} + \sqrt{225}$$

Answer: 23

$$\sqrt{121x^2y^2}$$

Answer: $11xy$

Write in order from smallest to largest: $\frac{5}{8}$, 0.75 , $\frac{8}{15}$

Answer: $\frac{8}{15}$, $\frac{5}{8}$, 0.75

Solve

$$-8.6x = 34.4$$

Answer: $x = -4$

Using 3.14 as the estimate for pi, approximate the a) circumference and b) area of a circle whose radius is 8 inches.

Answer: a) 50.24 inches b) 200.96 square inches

Find the mean of the numbers, 18, 16, 20, 12

Answer: 16.5

Find the median of the numbers, 24, 29, 27, 28, 30

Answer: 28

Identify the mode of the numbers, 6, 4, 4, 5, 6, 6, 4, 4, 4, 3, 5

Answer: 4

Find the unit price of one t-shirt if they are sold at 3 for \$28.97.

Answer: \$9.66

Chapter 6: Percents

Convert 14.7% to a) a fraction and b) a decimal.

Answer: a) $\frac{147}{1000}$ b) 0.147

Translate and solve

63 is 35% of what number?

Answer: $63 = 0.35 \cdot n$; $n = 180$

The nutrition label on a package of granola bars says that each granola bar has 180 calories, and 81 calories are from fat. What percent of the total calories is from fat?

Answer: 45%

Elliot received \$510 commission when he sold a \$3400 painting at the art gallery where he works. What was the rate of commission?

Answer: 15%

Nandita bought a set of towels on sale for \$67.50. The original price of the towels was \$90. What was the discount rate?

Answer: 25%

Alan invested \$23,000 in a friend's business. In 5 years the friend paid him the \$23,000 plus \$9200 interest. What was the rate of interest?

Answer: 8%

Solve: $\frac{9}{p} = \frac{-6}{14}$

Answer: $p = -21$

Chapter 7: The Properties of Real Numbers

List the a) whole numbers, b) integers, c) rational numbers, d) irrational numbers,

e) real numbers $-5, -2\frac{1}{4}, -\sqrt{4}, 0.\overline{25}, \frac{13}{5}, 4$

Answer: a) 4 b) $-5, -\sqrt{4}, 4$ c) $-5, -2\frac{1}{4}, -\sqrt{4}, 0.\overline{25}, \frac{13}{5}, 4$ d) none

e) $-5, -2\frac{1}{4}, -\sqrt{4}, 0.\overline{25}, \frac{13}{5}, 4$

Simplify

$$\left(\frac{8}{15} + \frac{4}{7}\right) + \frac{3}{7}$$

Answer: $\frac{23}{15}$

$$3(y + 3) - 8(y - 4)$$

Answer: $-5y + 41$

$$\frac{8}{17} \cdot 49 \cdot \frac{17}{8}$$

Answer: 49

A playground is 55 feet wide. Convert the width to yards.

Answer: $18\frac{1}{3}$ yard

Every day last week Amit recorded the number of minutes he spent reading. The number of minutes he read each day was 48, 26, 81, 54, 43, 62, 106. How many hours did Amit spend reading last week?

Answer: 7 hours

June walked 2.8 kilometers. Convert this length to miles knowing 1 mile is 1.61 kilometer.

Answer: 1.74 miles

Chapter 8: Solve Linear Equations

Solve

$$y + 13 = -8$$

$$\text{Answer: } y = -21$$

$$p + \frac{2}{5} = \frac{8}{5}$$

$$\text{Answer: } p = \frac{6}{5}$$

$$48 = \frac{2}{3}x$$

$$\text{Answer: } x = 72$$

$$4(a - 3) - 6a = -18$$

$$\text{Answer: } a = 3$$

$$7q + 14 = -35$$

$$\text{Answer: } q = -7$$

$$4v - 27 = 7v$$

$$\text{Answer: } v = -3$$

$$\frac{7}{8}y - 6 = \frac{3}{8}y - 8$$

$$\text{Answer: } y = -4$$

$$26 - 4(z - 2) = 6$$

$$\text{Answer: } z = -7$$

$$\frac{3}{4}x - \frac{2}{3} = \frac{1}{2}x - \frac{5}{6}$$

$$\text{Answer: } x = -\frac{2}{3}$$

$$0.7y + 4.8 = 0.84y - 5.3$$

Answer: $y = 70$

Translate and solve

Four less than n is 13.

Answer: $n - 4 = 13$; $n = 17$

Chapter 9: Math Models and Geometry

One number is 8 less than another. Their sum is negative twenty-two. Find the numbers.

Answer: $-7, -15$

The sum of two consecutive integers is -95 . Find the numbers.

Answer: $-47, -48$

Wilma has \$3.65 in dimes and quarters. The number of dimes is 2 less than the number of quarters. How many of each coin does she have?

Answer: 9 dimes and 11 quarters

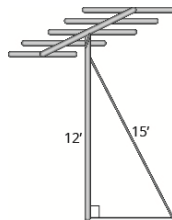
Two angles are supplementary. The larger angle is 24° more than the smaller angle. Find the measures of both angles.

Answer: $78^\circ, 102^\circ$

One angle of a triangle is 20° more than the smallest angle. The largest angle is the sum of the other angles. Find the measures of all three angles.

Answer: $35^\circ, 55^\circ, 90^\circ$

Erik needs to attach a wire to hold the antenna to the roof of his house, as shown in the figure. The antenna is 15 feet tall and Erik has 15 feet of wire. How far from the base of the antenna can he attach the wire?



Answer: 9 feet

The width of a rectangle is 4 less than the length. The perimeter is 96 inches. Find the length and the width.

Answer: length 24 in. width 20 in.

Find the a) volume and b) surface area of a rectangular carton with length 24 inches, width 18 inches, and height 6 inches.

Answer: a) 2592 cubic inches b) 1368 square inches

Chapter 10: Polynomials

Simplify:

$$(8m^2 + 12m - 5) - (2m^2 - 7m - 1)$$

Answer: $6m^2 + 19m - 4$

$$p^3 \cdot p^{10}$$

Answer: p^{13}

$$(y^4)^3$$

Answer: y^{12}

$$(3a^5)^3$$

Answer: $27a^{15}$

$$(x^3)^5(x^2)^3$$

Answer: x^{21}

$$\left(\frac{2}{3}m^3n^6\right)\left(\frac{1}{6}m^4n^4\right)$$

Answer: $\frac{1}{9}m^7n^{10}$

$$(y - 4)(y + 12)$$

Answer: $y^2 + 8y - 48$

$$(3c + 1)(9c - 4)$$

Answer: $27c^2 - 3c - 4$

$$(x - 1)(x^2 - 3x - 2)$$

Answer: $x^3 - 4x^2 + x + 2$

$$(8x)^0$$

Answer: 1

$$\frac{(x^3)^5}{(x^2)^4}$$

Answer: x^7

$$\frac{32a^7b^2}{12a^3b^6}$$

Answer: $\frac{8a^4}{3b^4}$

$$(ab^{-3})(a^{-3}b^6)$$

Answer: $\frac{b^3}{a^2}$

Write in scientific notation: a) 4,800,000 b) 0.00637

Answer: a) 4.8×10^6 b) 6.37×10^{-3}

Factor the greatest common factor from the polynomial

$$3x^4 - 6x^3 - 18x^2$$

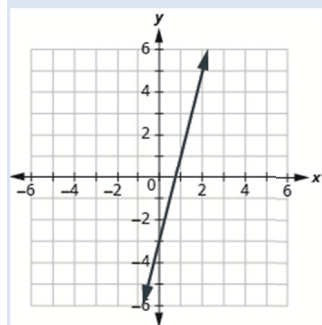
Answer: $3x^2(x^2 - 2x - 6)$

Chapter 11: Graphs

Graph

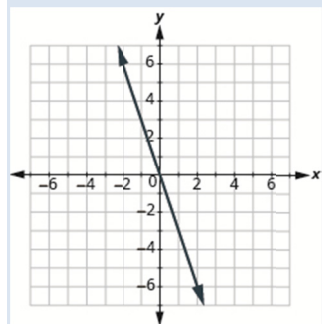
$$y = 4x - 3$$

Answer:



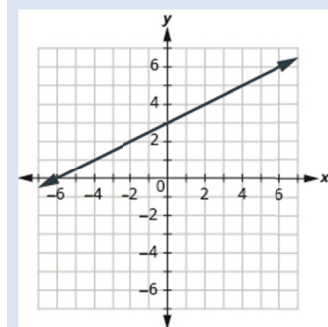
$$y = -3x$$

Answer:



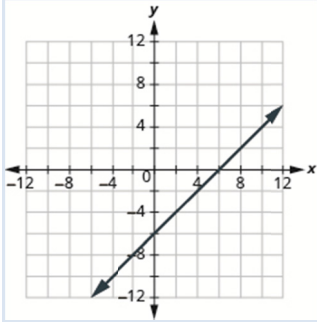
$$y = \frac{1}{2}x + 3$$

Answer:



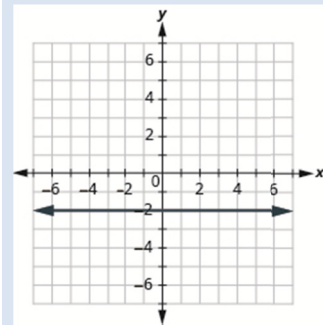
$$x - y = 6$$

Answer:



$$y = -2$$

Answer:



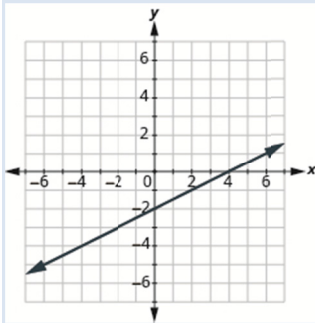
Find the intercepts. $2x + 3y = 12$

Answer: y – intercept $(0, 4)$; x – intercept $(6, 0)$

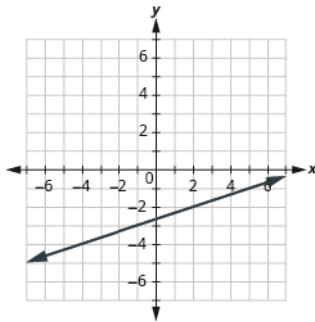
Graph using the intercepts

$$2x - 4y = 8$$

Answer:



Find the slope of the line shown.



Answer: $m = \frac{2}{5}$

Use the slope formula to find the slope of the line between the points $(-5, -2)$, $(3, 2)$.

Answer: $m = \frac{1}{2}$

Graph the line passing through the point $(-3,4)$ and with slope $m = -\frac{1}{3}$.

Answer:

