

1.) $3(x + y) = y$

If (x, y) is a solution to the equation above and $y \neq 0$, what is the ratio of $\frac{x}{y}$?

A) $-\frac{4}{3}$

B) $-\frac{2}{3}$

C) $\frac{1}{3}$

D) $\frac{2}{3}$

$$3 \div \frac{3x}{y} = -\frac{2}{3}$$

$$\frac{x}{y} = -\frac{2}{3}$$

$$3x + 3y = y$$

$$-3y - 3y$$

$$3x = -2y$$

$$\frac{3x}{y} = \frac{-2y}{y}$$

2.) Which of the following is equivalent to $(s - t) \left(\frac{s}{t} \right)$?

A) $\frac{s}{t} - s$

B) $\frac{s}{t} - st$

C) $\frac{s^2}{t} - s$

D) $\frac{s^2}{t} - \frac{s}{t^2}$

$$\frac{s^2}{t} - \frac{st}{t}$$

$$\frac{s^2}{t} - s$$

3.) If x is not equal to zero, what is the value of
of $\frac{4(3x)^2}{(2x)^2}$?

$$\frac{4(9x^2)}{4x^2} = \frac{9x^2}{x^2} = 9$$

1.) Solve for Q

$$W(KC - RQ) + A = M$$

$$-A - A$$

$$-RQ = \frac{M-A-KC}{W}$$

$$W(KC - RQ) = \frac{M-A}{W}$$

$$Q = \frac{M-A}{W} - KC$$

$$KC - RQ = \frac{M-A}{W} - KC$$

2.) Solve for E

$$E = \frac{T(D+N) - B}{G}$$

$$\frac{GE + B}{T} - N = D$$
$$+N \quad +N$$

$$\frac{GE + B}{T} = D + N$$

$$GE + B = T(D + N)$$
$$GE = T(D + N) - B$$

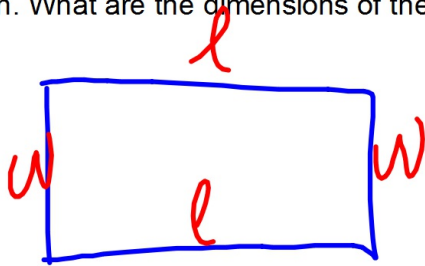
Section 2.5 - Equations and Problem Solving

Objective 1: I can define variables of an equation in terms of another variable.

Some problems contain two or more unknown quantities. To solve such problems, first decide which unknown quantity the variable will represent. Then express the other unknown quantity or quantities in terms of that variable.

Geometry

1.) The length of a rectangle is 6 in. more than its width. The perimeter of the rectangle is 24 in. What are the dimensions of the rectangle?



$$P = 24 \text{ in}$$

$$l = 6 + w$$

$$P = 2l + 2w$$

$$24 = 2(6 + w) + 2w$$

$$24 = 12 + 2w + 2w$$

$$4w + 12 = 24$$

$$w = 3$$

2.) The perimeter of a rectangle is 58 inches. The width is five more than three times the length. Write and solve an equation to find the dimensions of this rectangle

$$P = 58$$

$$W = 5 + 3l$$

$$W = 23$$

$$58 = 2(5 + 3l) + 2l$$

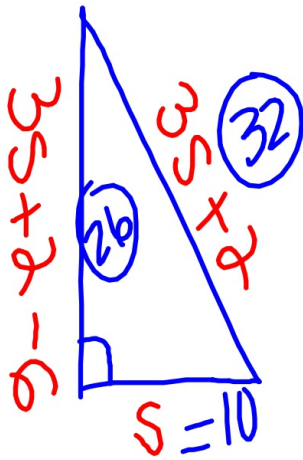
$$58 = 10 + 6l + 2l$$

$$8l + 10 = 58$$

$$8l = 48$$

$$l = 6$$

3.) The perimeter of triangle is 68cm. The longest side is two more than three times the shortest side. The third side is six less than the longest side. Write and solve an equation to find the lengths of all three sides



$$3s+2 + 3s+2 - 6 + s = 68$$

$$7s - 2 = 68$$

$$7s = 70$$

$$s = 10$$

4.) The perimeter of a rectangle is 22. The length is five less than seven times the width. Write and solve an equation to find the dimensions of the rectangle.

$$l = 7w - 5 \text{ (9)}$$

$$w = ?$$

$$P = 2l + 2w$$

$$22 = 2(7w - 5) + 2w$$

$$22 = 14w - 10 + 2w$$

$$16w - 10 = 22$$

$$16w = 32$$

$$w = 2$$

5.) The width of a rectangle is one half its length. The perimeter of the rectangle is 54 cm. Write and solve an equation to find the dimensions of the rectangle.

$$\begin{aligned} W &= \frac{1}{2}L \\ l &= ? \\ P &= 54 \end{aligned} \quad \begin{aligned} 54 &= 2\left(\frac{1}{2}l\right) + 2l \\ 54 &= l + 2l \\ 3l &= 54 \\ l &= 18 \end{aligned}$$

Consecutive Integers

differ by 1. The integers 50 and 51 are consecutive integers, and so are -10, -9, and -8. For consecutive integer problems, it may help to define a variable before describing the problem in words. Let a variable represent one of the unknown integers. Then define the other unknown integers in terms of the first one.

1.) Three consecutive integers have a sum of 102. What are these three integers?

$$\begin{array}{r} \overset{33}{\underline{X}} + \overset{34}{\underline{X+1}} + \overset{35}{\underline{X+2}} = 102 \\ 3X + 3 = 102 \\ 3X = 99 \\ X = 33 \end{array} \quad \begin{array}{l} \text{int 1} = X \\ \text{int 2} = X+1 \\ \text{int 3} = X+2 \end{array}$$

2.) Four consecutive integers have a sum of -78. Write and solve an equation to find these integers.

$$\begin{array}{r} \overset{-21}{\underline{X}} + \overset{-20}{\underline{X+1}} + \overset{-19}{\underline{X+2}} + \overset{-18}{\underline{X+3}} = -78 \\ 4X + 6 = -78 \\ 4X = -84 \\ \textcircled{X = -21} \end{array} \quad \begin{array}{l} \text{int 1} = X \\ \text{int 2} = X+1 \\ \text{int 3} = X+2 \\ \text{int 4} = X+3 \end{array}$$

3.) Three consecutive even numbers have a sum of 270. Write and solve a equation to find these numbers.

$$\begin{array}{ccccccc}
 & 2 & & 4 & & 6 & & 8 & & 10 \\
 & \downarrow & & \downarrow & & \downarrow & & \downarrow & & \\
 & 2 & & 2 & & 2 & & 2 & & \\
 88 & & 90 & & 92 & & & & & \\
 \underline{X} & + & \underline{X+2} & + & \underline{X+4} & = & 270
 \end{array}$$

$$\begin{aligned}
 3X + 6 &= 270 \\
 3X &= 264 \\
 X &= 88
 \end{aligned}$$

4.) Three consecutive multiples of 4 have a sum of 144. Write and solve an equation to find these numbers.

$$\begin{array}{ccccccc}
 4 & & 8 & & 12 & & 16 & & 20 & & 24 \\
 & \downarrow & & \downarrow & & \downarrow & & & & & \\
 & 4 & & 4 & & 4 & & & & & \\
 \textcircled{44} & & \textcircled{48} & & \textcircled{52} & & & & & & \\
 \underline{X} & + & \underline{X+4} & + & \underline{X+8} & = & 144
 \end{array}$$

$$\begin{aligned}
 3X + 12 &= 144 \\
 3X &= 132 \\
 X &= 44
 \end{aligned}$$

$\begin{aligned} \text{Int } 1 &= X \\ \text{Int } 2 &= X+4 \\ \text{Int } 3 &= X+8 \end{aligned}$

5.) Four consecutive multiples of seven have a sum of 378. Write and solve an equation to find these numbers.

Hwk #17 - due Monday

Sec. 2-5

Page: 107

Problems: 1, 2, 4, 5-9

IXL #6 - J.7 & J.8 **due Friday, Oct. 5th at 4pm!**