

SOLUTIONS

Integers Worksheet Algebra

Name: _____
Period: _____

Solve each problem using VESA. Show all of your work.

1. Find two consecutive even integers whose sum is 126.

$$\begin{array}{rcl} x & & \\ x+2 & = & 126 \\ \hline 2x+2 & = & 126 \\ 2x & = & 124 \\ x & = & 62 \end{array}$$

Final
Answer:
62, 64

2. The sum of three consecutive integers is -114. Find the integers.

$$\begin{array}{rcl} x & & \\ x+1 & = & -114 \\ x+2 & & \\ \hline 3x+3 & = & -114 \\ 3x & = & -117 \\ x & = & -39 \end{array}$$

-39, -38, -37

3. The sum of three consecutive integers is 53 more than the least of the integers. Find the integers.

$$\begin{array}{rcl} x & & \\ x+1 & = & 53 + x \\ x+2 & & \end{array}$$

$$\begin{array}{rcl} 3x+3 & = & 53 + x \\ 2x+3 & = & 53 \end{array}$$

$$\begin{array}{rcl} 2x & = & 50 \\ x & = & 25 \end{array}$$

25
26
27

4. The sum of three consecutive integers is 71 less than the least of the integers. Find the integers.

$$3x+3 = x - 71$$

$$\begin{array}{rcl} 2x+3 & = & -71 \\ -3 & -3 & \\ 2x & = & -74 \\ x & = & -37 \end{array}$$

-37, -36, -35

5. Find two consecutive odd integers whose sum is 111.

* Error in Problem

$$\begin{array}{rcl} (x) + (x+2) & = & 111 \\ 2x+2 & = & 111 \\ 2x & = & 109 \end{array}$$

$$x = 54.5$$

6. The sum of three consecutive even integers is 138. Find the integers.

$$\begin{array}{rcl} x & & \\ x+2 & & \\ x+4 & = & 138 \end{array}$$

$$\begin{array}{rcl} 3x+6 & = & 138 \\ 3x & = & 132 \\ x & = & 44 \end{array}$$

44, 46, 48

Consecutive Integer Word Problems

In this lesson, we will explore consecutive integers, consecutive even integers, consecutive odd integers, and word problems that contain these types of numbers.

Ex #1: Determine the next two consecutive integers in each case.

- (a) -5, -4, -3, _____, _____ (b) 12, 13, 14, _____, _____ (c) x , _____, _____
(Assume x is an integer.)

Ex #2: Determine the next three consecutive **even** integers in each case.

- (a) -18, -16, -14, _____, _____ (b) 20, 22, 24, _____, _____ (c) x , _____, _____
(Assume x is an even integer.)

Ex #3: Determine the next three consecutive **odd** integers in each case.

- (a) -13, -11, -9, _____, _____ (b) 5, 7, 9, _____, _____ (c) x , _____, _____
(Assume x is an odd integer.)

Part (c) of each exercise above illustrates how we should define our variables when we seek to find consecutive integers that meet certain criteria.

Consecutive Integers

Let: 1st number = x
2nd number = $x + 1$
3rd number = $x + 2$

Consecutive EVEN Integers

Let: 1st number = x
2nd number = $x + 2$
3rd number = $x + 4$

Consecutive ODD Integers

Let: 1st number = x
2nd number = $x + 2$
3rd number = $x + 4$

We will now apply this work to solve a variety of consecutive integer problems algebraically.

Ex #4: Find 2 consecutive integers whose sum is 61.

$$\begin{array}{r} x \\ x+1 \end{array} = 61$$

$$2x + 1 = 61$$

$$2x = 60$$

$$x = 30$$

$$30, 31$$

Ex #5: Find 3 consecutive odd integers such that the largest is 3 less than twice the smallest.

$$\begin{array}{r} x \\ x+2 \\ x+4 \end{array}$$

$$x + 4 = 2(x) - 3$$

$$x + 4 = 2x - 3$$

$$7 = x$$