

Algebra RH

Essential Questions: What are consecutive integers? How do we solve word problems involving consecutive integers?

Do Now:

Mo, Larry and Curly are comparing their weights as they wait for Math class to begin. Mo and Larry together weigh 150 lbs more than Curly. Use M , L and C as variables and write as many equations as possible to represent this relationship.

$$M + L = 150 + C$$

$$M + L - 150 = C$$

Examples:

1. The larger of two numbers is 1 less than twice the smaller. Three times the smaller is 6 less than twice the larger. Find both numbers.

Let x = smaller number = 8
 $(2x - 1)$ = larger number = 15

$$3x = 2(2x - 1) - 6$$

$$3x = 4x - 2 - 6$$

$$3x = 4x - 8$$

$$-x = -8$$

$$x = 8$$

2. Sue is 6 years younger than Al. Three times Sue's age is 10 more than twice Al's age. Find both of their ages.

A = Al's age = 28
 $(A - 6)$ = Sue's age = 22

$$3(A - 6) = 2A + 10$$

$$3A - 18 = 2A + 10$$

$$A - 18 = 10$$

$$A = 28$$

Consecutive Integers

increase by 1

$$x, x+1, x+2, x+3$$

$$2x-4, 2x-3, 2x-2$$

Consecutive Odd/Even Integers

increase by 2

$$x, x+2, x+4$$

3. Find three consecutive positive odd integers so that the largest decreased by 3 times the second is 47 less than the smallest.

$$\begin{aligned}
 x &= \text{1st con. positive odd integer} = 15 \\
 (x+2) &= \text{2nd con. positive odd integer} = 17 \\
 (x+4) &= \text{3rd con. positive odd integer} = 19
 \end{aligned}$$

$$\begin{aligned}
 (x+4) - 3(x+2) &= x - 47 \\
 x+4 - 3x - 6 &= x - 47 \\
 -2x - 2 &= x - 47 \\
 -2 &= 3x - 47 \\
 45 &= 3x \\
 x &= 15
 \end{aligned}$$

4. Find three consecutive integers such that 5 times the second is 22 more than twice the sum of the smallest and largest.

$$\begin{aligned}
 x &= \text{1st con integer} = 21 \\
 (x+1) &= \text{2nd con integer} = 22 \\
 (x+2) &= \text{3rd con integer} = 23
 \end{aligned}$$

$$\begin{aligned}
 5(x+1) &= 2(x + x+2) + 22 \\
 5x+5 &= 2(2x+2) + 22 \\
 5x+5 &= 4x+4+22 \\
 5x+5 &= 4x+26 \\
 x+5 &= 26 \\
 x &= 21
 \end{aligned}$$

5. Find three consecutive negative even integers such that the difference between the largest and smallest is 16 more than the second.

$$\begin{aligned}
 x &= \text{1st con. negative even integer} = -14 \\
 (x+2) &= \text{2nd con. negative even integer} = -12 \\
 (x+4) &= \text{3rd con. negative even integer} = -10
 \end{aligned}$$

$$\begin{aligned}
 (x+4) - x &= (x+2) + 16 \\
 4 &= x + 18 \\
 -14 &= x
 \end{aligned}$$