

Problem Solving Using Equations

Consecutive numbers are numbers in counting order such as 3, 4, 5. Beginning with an even integer and counting by two gives **consecutive even integers**. For example $-6, -4, -2, 0, 2, 4$, are consecutive even integers. Beginning with an odd integer and counting by two gives **consecutive odd integers**. For example $-3, -1, 1, 3, 5$ are consecutive odd integers.

Consecutive integers: $x, x+1, x+2, \dots$ for example: 10, 11, 12

Consecutive even integers: $x, x+2, x+4, \dots$ for example: 8, 10, 12

Consecutive odd integers: $x, x+2, x+4, \dots$ for example: 7, 9, 11

Example 1: Find three consecutive even integers whose sum is -12

EXPLORE Let x = the least even integer.

$x + 2$ = the next greater even integer.

$x + 4$ = the greatest of the three even integers.

PLAN Write an equation.

The sum of three consecutive even integers is -12 .

SOLVE $x + (x + 2) + (x + 4) = -12$

$$3x + 6 = -12$$

$$3x = -18$$

$$x = -6$$

Therefore, $x + 2 = -4$, $x + 4 = -2$.

The integers are $-6, -4$, and -2 .

EXAMINE

Is -12 the sum of $-6, -4$, and -2 ?

$$-12 = -6 + -4 + -2$$

$$-12 = -12$$

Since this is a true statement, the result is correct