

CONSECUTIVE INTEGERS

CONSECUTIVE: one after another in order.

Examples:

- Three consecutive integers: 1, 2, 3 → x, x+1, x+2 ↙ first # always "x"
- Three consecutive **even** integers: 2, 4, 6 → x, x+2, x+4
- Three consecutive **odd** integers: 1, 3, 5 → x, x+2, x+4

Equations:

1. Find two consecutive integers whose sum is 45.

Let:

1st	x	22
2nd	x+1	23

$$(1st) + (2nd) = 45$$

$$(x) + (x+1) = 45$$

$$2x + 1 = 45$$

$$\frac{2x}{2} = \frac{44}{2}$$

$$(1st) + (2nd) + (3rd) = 33$$

$$(x) + (x+1) + (x+2) = 33$$

$$3x + 3 = 33$$

$$3x = 30$$

x = 22

x = 10

2. Find three consecutive integers whose sum is 33.

1st	x	10
2nd	x+1	11
3rd	x+2	12

Evens & Odds:

3. Find two consecutive even integers whose sum is 26.

1st	x	12
2nd	x+2	14

$$(x) + (x+2) = 26$$

$$2x + 2 = 26$$

$$\frac{2x}{2} = \frac{24}{2}$$

x = 12

4. Find three consecutive EVEN integers whose sum is 54.

1st	x	16
2nd	x+2	18
3rd	x+4	20

$$(x) + (x+2) + (x+4) = 54$$

$$3x + 6 = 54$$

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

x = 16

5. Find two consecutive odd integers whose sum is 128.

1st	x	63
2nd	x+2	65

$$(x) + (x+2) = 128$$

$$2x + 2 = 128$$

$$\frac{2x}{2} = \frac{126}{2}$$

x = 63

PRACTICE: Try these... follow the same steps we used in the previous examples!

1. Find three consecutive integers such that the sum of the first and the third is 16.

1st	x	7
2nd	x+1	8
3rd	x+2	9

$$(1st) + (3rd) = 16$$

$$x + (x+2) = 16$$

$$2x + 2 = 16$$

$$2x = 14$$

$$x = 7$$

2. Find three consecutive odd integers such that the sum of the first and the third equals the sum of the second and 43.

1st	x	41
2nd	x+2	43
3rd	x+4	45

$$(1st) + (3rd) = (2nd) + 43$$

$$x + (x+4) = (x+2) + 43$$

$$2x + 4 = x + 45$$

$$x + 4 = 45$$

$$x = 41$$

More Practice with Consecutive Integers

3. Find two consecutive integers such that ten more than twice the smaller is seven less than three times the larger.

1st	x	14
2nd	x+1	15

$$2(\text{smaller}) + 10 = 3(\text{larger}) - 7$$

$$2(x) + 10 = 3(x+1) - 7$$

$$2x + 10 = 3x + 3 - 7$$

$$2x + 10 = 3x - 4$$

$$14 = x - 4$$

$$x = 14$$

4. Find three consecutive odd integers such that the sum of the smaller two is three times the largest increased by seven.

1st	x	-17
2nd	x+2	-15
3rd	x+4	-13

$$(1st) + (2nd) = 3(3rd) + 7$$

$$x + (x+2) = 3(x+4) + 7$$

$$2x + 2 = 3x + 12 + 7$$

$$2x + 2 = 3x + 19$$

$$-17 = x + 19$$

$$x = -17$$

5. The lengths of the sides of a triangle are consecutive odd integers. What is the length of the longest side if the perimeter is 45? [Hint: draw a diagram and label it!]

1st	x	13
2nd	x+2	15
3rd	x+4	17

$$x + (x+2) + (x+4) = 45$$

$$3x + 6 = 45$$

$$3x = 39$$

$$x = 13$$

The longest side is 17.

