Algebra Word Problems Worksheets

1. The sum of two consecutive odd numbers is 156. What are the numbers?

2. If n represents an odd integer, write expressions in terms of n that represent the next three consecutive odd integers. If the four consecutive odd integers have a sum of 56, find the numbers.

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1. The sum of two consecutive odd numbers is 156. What are the numbers?

If we let n represent one odd number, then $n + 2$ represents the next consecutive odd number.

$$n + (n + 2) = 156$$
$$2n + 2 - 2 = 156 - 2$$
$$2n = 154$$
$$\left(\frac{1}{2}\right)(2n) = \left(\frac{1}{2}\right)(154)$$
$$n = 77$$

The two numbers are 77 and 79.

2. If n represents an odd integer, write expressions in terms of n that represent the next three consecutive odd integers. If the four consecutive odd integers have a sum of 56, find the numbers.

If we let n represent an odd integer, then $n + 2$, $n + 4$, and $n + 6$ represent the next three consecutive odd integers.

$$n + (n + 2) + (n + 4) + (n + 6) = 56$$
$$4n + 12 = 56$$
$$4n + 12 - 12 = 56 - 12$$
$$4n = 44$$
$$n = 11$$

The numbers are 11, 13, 15, and 17.

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3. Six times the sum of three consecutive odd integers is -18. Find the integers.

4. The sum of two consecutive even numbers is 54. Find the numbers.

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3. Six times the sum of three consecutive odd integers is -18. Find the integers.

If we let n represent the first odd integer, then $n + 2$ and $n + 4$ represent the next two consecutive odd integers.

$$6\big(n + (n + 2) + (n + 4)\big) = -18$$
$$6(3n + 6) = -18$$
$$18n + 36 = -18$$
$$18n + 36 - 36 = -18 - 36$$
$$18n = -54$$
$$n = -3$$
$$n + 2 = -1$$
$$n + 4 = 1$$

The integers are $-3, -1$, and 1.

4. The sum of two consecutive even numbers is 54. Find the numbers.

First consecutive even integer: x

Second consecutive even integer: $x + 2$

$$x + (x + 2) = 54$$
$$2x + 2 = 54$$
$$2x + 2 - 2 = 54 - 2$$
$$2x + 0 = 52$$
$$\left(\frac{1}{2}\right)(2x) = \left(\frac{1}{2}\right)(52)$$
$$x = 26$$

The consecutive even integers are 26 and 28.

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5. I am thinking of a number. If you multiply my number by 4, add -4 to the product, and then take $\frac{1}{3}$ of the sum, the result is -6. Find my number.

6. A number is $\frac{1}{7}$ of another number. The difference of the numbers is 18. (Assume that you are subtracting the smaller number from the larger number.) Find the numbers.

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5. I am thinking of a number. If you multiply my number by 4, add -4 to the product, and then take $\frac{1}{3}$ of the sum, the result is -6. Find my number.

Let n represent the given number.

$$\frac{1}{3}\left(4n + (-4)\right) = -6$$

$$\frac{4}{3}n - \frac{4}{3} = -6$$

$$\frac{4}{3}n - \frac{4}{3} + \frac{4}{3} = -6 + \frac{4}{3}$$

$$\frac{4}{3}n = \frac{-14}{3}$$

$$n = -3\frac{1}{2}$$

6. A number is $\frac{1}{7}$ of another number. The difference of the numbers is 18. (Assume that you are subtracting the smaller number from the larger number.) Find the numbers.

If we let n represent a number, then $\frac{1}{7}n$ represents the other number.

$$n - \left(\frac{1}{7}n\right) = 18$$

$$\frac{7}{7}n - \frac{1}{7}n = 18$$

$$\frac{6}{7}n = 18$$

$$\frac{7}{6} \cdot \frac{6}{7}n = \frac{7}{6} \cdot 18$$

$$1n = 7 \cdot 3$$

$$n = 21$$

The numbers are 21 and 3.

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7. A number is 6 greater than $\frac{1}{2}$ another number. If the sum of the numbers is 21, find the numbers.

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7. A number is 6 greater than $\frac{1}{2}$ another number. If the sum of the numbers is 21, find the numbers.

If we let n represent a number, then $\frac{1}{2}n + 6$ represents the first number.

$$n + \left(\frac{1}{2}n + 6\right) = 21$$

$$\left(n + \frac{1}{2}n\right) + 6 = 21$$

$$\left(\frac{2}{2}n + \frac{1}{2}n\right) + 6 = 21$$

$$\frac{3}{2}n + 6 = 21$$

$$\frac{3}{2}n + 6 - 6 = 21 - 6$$

$$\frac{3}{2}n + 0 = 15$$

$$\frac{3}{2}n = 15$$

$$\frac{2}{3} \cdot \frac{3}{2}n = \frac{2}{3} \cdot 15$$

$$1n = 2 \cdot 5$$

$$n = 10$$

Since the numbers sum to 21, they are 10 and 11.