

ALG 1: RATIONAL NUMBERS

Advanced Algebra 1 Lesson Examples/Notes Consecutive Integers

Consecutive Integers Definition -

you start with any given integer and count by ones, you will get **consecutive integers**. So consecutive integers are **ONE** apart!

Starting with 5, the next four consecutive integers are:

5: $6 \rightarrow 7 \rightarrow 8 \rightarrow 9$

Example 1: Two consecutive integers have a sum of 77. Find the integers.

- 1) **Variable:** Let n = the first integer
Let $n + 1$ = the second integer
- 2) **Words:** first integer + second integer = sum

3) **Equation:** $n + (n + 1) = 77$

4) **Solve:** $2n + 1 = 77$

$$\begin{array}{r} n: 38 \\ n+1: +39 \\ \hline 77 \checkmark \end{array}$$

$$\begin{array}{r} 2n + 1 = 77 \\ \quad \quad \quad -1 \\ \hline 2n = 76 \\ \quad \quad \quad \div 2 \\ \hline n = 38 \end{array}$$

5) **Solution:**
& **Check:**

1) The **sum** of two consecutive integers is 243. Find the integers.

- Variables:** Let n = 1st integer
 $n + 1$ = 2nd integer
- Words:** 1st integer + 2nd integer = sum

Equation: $n + (n + 1) = 243$

Solve: $2n + 1 = 243$

$$\begin{array}{r} n: 121 \\ n+1: +122 \\ \hline 243 \checkmark \end{array}$$

$$\begin{array}{r} 2n + 1 = 243 \\ \quad \quad \quad -1 \\ \hline 2n = 242 \\ \quad \quad \quad \div 2 \\ \hline n = 121 \end{array}$$

Solution/Check:

2) The **sum** of three consecutive integers is 234. Find the integers.

- Variables:** Let 1st = n 2nd = $(n + 1)$ 3rd = $n + 2$

Words: 1st + 2nd + 3rd = sum

Equation: $n + (n + 1) + (n + 2) = 234$

Solve: $3n + 3 = 234$

$$\begin{array}{r} 1^{st} 77 \\ 2^{nd} 78 \\ + 3^{rd} 79 \\ \hline 234 \checkmark \end{array}$$

$$\begin{array}{r} 3n + 3 = 234 \\ \quad \quad \quad -3 \\ \hline 3n = 231 \\ \quad \quad \quad \div 3 \\ \hline n = 77 \end{array}$$

Solution/Check:

Consecutive Integers (EVEN or ODD)

Note: Even or odd consecutive integers are always **TWO** apart.

- Name the next three consecutive **ODD** integers larger than 3.

3. $5 \xrightarrow{+2} 7 \xrightarrow{+2} 9$

- Name the next three consecutive **EVEN** integers larger than 2.

2. $4 \xrightarrow{+2} 6 \xrightarrow{+2} 8$

Example 2: Two consecutive **ODD** integers have a sum of 92. Find the integers.

- 1) **Variable:** Let n = the first integer
Let $n + 2$ = the second integer

2) **Words:** first integer + second integer = sum

3) **Equation:** $n + (n + 2) = 92$

4) **Solve:** $2n + 2 = 92$

$$\begin{array}{r} 1^{st} 45 \\ 2^{nd} +47 \\ \hline 92 \checkmark \end{array}$$

$$\begin{array}{r} 2n + 2 = 92 \\ \quad \quad \quad -2 \\ \hline 2n = 90 \\ \quad \quad \quad \div 2 \\ \hline n = 45 \end{array}$$

5) **Solution:**
& **Check:**

3) Find two consecutive **ODD** integers whose sum is -68.

- Variables:** Let n = 1st $n + 2$ = 2nd **ODD** int.

Words: 1st **ODD** + 2nd **ODD** = sum

Equation: $n + (n + 2) = -68$

Solve: $2n + 2 = -68$

$$\begin{array}{r} 1^{st} \text{ ODD } -35 \\ + 2^{nd} \text{ ODD } -33 \\ \hline -68 \checkmark \end{array}$$

$$\begin{array}{r} 2n + 2 = -68 \\ \quad \quad \quad -2 \\ \hline 2n = -70 \\ \quad \quad \quad \div 2 \\ \hline n = -35 \end{array}$$

Solution/Check:

4) Find **three** consecutive integers such that the **sum** of the first and third is 22.

- Variables:** Let: 1st = n 2nd = $n + 1$ 3rd = $n + 2$

Words: 1st int + 3rd int = sum

Equation: $n + (n + 2) = 22$

Solve: $2n + 2 = 22$

$$\begin{array}{r} 1^{st} 10 \\ + 3^{rd} 12 \\ \hline 22 \checkmark \end{array}$$

$$\begin{array}{r} 2n + 2 = 22 \\ \quad \quad \quad -2 \\ \hline 2n = 20 \\ \quad \quad \quad \div 2 \\ \hline n = 10 \end{array}$$

Solution/Check:

$$\{10, 11, 12\}$$