Definitions:

1.) **Consecutive Integers (CI):** are integers that follow one another in order. They have a difference of 1 between every two numbers.

Ex: 1, 2, 3, 4, 5, 6, ... **algebra:** n, n + 1, n + 2, . . .

2) Consecutive Even Integers (CEI): are integers that follow one another in order. They have a difference of 2 between every two numbers.
Ex: 2, 4, 6, 8, 10, . . . **algebra:** n, n + 2, n + 4, . .

3.) **Consecutive Odd Integers (COI):** are integers that follow one another in order. They have a difference of 2 between every two numbers.
Ex: 1, 3, 5, 7, 9, ... **algebra:** n, n + 2, n + 4, . .

Example

1.) Find two consecutive integers whose sum is 95.

ans. 47

Let 1st CI = x

2nd CI = $x+1$ = $47+1 = 48$

(1st CI) + (2nd CI) = 95

Equation: $x + x + 1 = 95$

$x + x + 1 = 95$

$2x + 1 = 95$

$-1 \quad -1$

$\frac{2x}{2} = \frac{94}{2}$

$x = 47$

Example

2.) Find three consecutive positive even integers such that 4 times the first decreased by the second is 12 more than twice the third.

ans 22

Let 1st CEI = x

2nd CEI = $x+2$ = $22+2 = 24$

3rd CEI = $x+4$ $22+4 = 26$

$4(1st\ CEI) - (2nd\ CEI) = 2(3rd\ CEI) + 12$

Equation: $4x - (x+2) = 2(x+4) + 12$

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

$4x - x - 2 = 2x + 8 + 12$

$3x - 2 = 2x + 20$

$-2x \quad -2x$

$x - 2 = 20$

$+2 \quad +2$

$x = 22$

Example

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

ans 15

Let 1st COI = x

2nd COI = $x+2$ = $15+2 = 17$

3rd COI = $x+4$ = $15+4 = 19$

$3rd - 3(2nd) = 1st - 47$

Equation: $x+4-3(x+2) = x-47$

$x+4-3(x+2) = x-47$

$x+4-3x-6 = x-47$

$-2x - 2 = x - 47$

$+2x \quad +2x$

$-2 = 3x - 47$

$+47 \quad +47$

$\frac{45}{3} = \frac{3x}{3}$

$x = 15$