

CHAPTER 5 (QUADRATIC EQUATIONS IN ONE VARIABLE)

General direction for the students :-Whatever be the notes provided , everything must be copied in the Maths Copy and then do the Home work in the same Copy.

PROBLEMS ON QUADRATIC EQUATIONS

These are the steps to remember to solve a word problem

Step 1. Read atleast twice the question carefully and determine what quantity (or quantities) must be found.

Step 2. Assume the unknown quantity by a variable.

Step 3. Frame the equation according to the question and then solve.

EXERCISE 5.5

Q2 iv) Let the first odd integer be x .

\Rightarrow second odd integer is $x + 2$.

A/Q $x^2 + (x + 2)^2 = 394$

$\Rightarrow 2x^2 + 4x - 390 = 0$

$\Rightarrow 2x^2 + 30x - 26x - 390 = 0$

$\Rightarrow 2x(x + 15) - 26(x + 15) = 0$

$\Rightarrow (x + 15)(2x - 26) = 0$

$\Rightarrow x = -15 , 13$

\therefore the required integers are 13 and 15.

Q10. Let the denominator be x .

\Rightarrow numerator = $8 - x$.

A/Q $\frac{8 - x + 2}{x + 2} = \frac{8 - x}{x} + \frac{4}{35}$

$\Rightarrow \frac{10 - x}{x + 2} = \frac{35(8 - x) + 4x}{35x}$

$\Rightarrow 35x(10 - x) = (280 - 31x)(x + 2)$

$\Rightarrow 4x^2 - 132x + 560 = 0$

$\Rightarrow x^2 - 33x + 140 = 0$

$\Rightarrow (x - 28)(x - 5) = 0$

$$\Rightarrow x = 28, 5$$

Possible value of x is 5. Because if x is 28 then numerator becomes negative.

\therefore the required fraction is $\frac{3}{5}$.

Q15 ii) 1st case:-

Let the breadth of the rectangle = x

$$\Rightarrow \text{length} = x + 5$$

$$\Rightarrow \text{Area} = x(x + 5) \text{-----(1)}$$

2nd case:-

New breadth = $2x$

New length = $(x + 5) - 9$

$$= x - 4$$

$$\Rightarrow \text{New area} = 2x(x - 4) \text{-----(2)}$$

$$\text{A/Q } 2x(x - 4) = x(x + 5) + 140$$

$$\Rightarrow x^2 - 13x - 140 = 0$$

$$\Rightarrow (x - 20)(x + 7) = 0$$

$$\Rightarrow x = 20, -7$$

\Rightarrow original breadth = 20m, avoid -7 as side cannot be negative

\Rightarrow dimensions are 20m and 25m.

HOME WORK: Left over questions upto question number 20 from the exercise 5.5.