



Quadratic Equations Ex 8.7 Q22

Answer :

Let the tens digit be x , then, the unit digits $= \frac{8}{x}$

Therefore, number $= \left(10x + \frac{8}{x}\right)$

And number obtained by interchanging the digits $= \left(10 \times \frac{8}{x} + x\right)$

Then according to question

$$\left(10x + \frac{8}{x}\right) - \left(10 \times \frac{8}{x} + x\right) = 18$$

$$\left(10x + \frac{8}{x}\right) - \left(10 \times \frac{8}{x} + x\right) = 18$$

$$\frac{(10x^2 + 8) - (80 + x^2)}{x} = 18$$

$$\frac{10x^2 + 8 - 80 - x^2}{x} = 18$$

$$\frac{9x^2 - 72}{x} = 18$$

$$9x^2 - 72 = 18x$$

$$9x^2 - 18x - 72 = 0$$

$$9(x^2 - 2x - 8) = 0$$

$$x^2 - 2x - 8 = 0$$

$$x^2 - 4x + 2x - 8 = 0$$

$$x(x - 4) + 2(x - 4) = 0$$

$$(x - 4)(x + 2) = 0$$

$$(x - 4) = 0$$

$$x = 4$$

Or

$$(x + 2) = 0$$

$$x = -2$$

So the digit can never be negative.

Therefore,

When $x = 4$ then the unit digits is

$$= \frac{8}{x}$$

$$= \frac{8}{4}$$

$$= 2$$

And therefore the number is

$$= \left(10x + \frac{8}{x} \right)$$

$$= (10 \times 4 + 2)$$

$$= 42$$

Thus, the required number be 42

$$x^2 - 2x - 8 = 0$$

$$x^2 - 4x + 2x - 8 = 0$$

$$x(x - 4) + 2(x - 4) = 0$$

$$(x - 4)(x + 2) = 0$$

$$(x - 4) = 0$$

$$x = 4$$

Or

$$(x + 2) = 0$$

$$x = -2$$

So the digit can never be negative.

Therefore,

When $x = 4$ then the unit digits is

$$= \frac{8}{x}$$

$$= \frac{8}{4}$$

$$= 2$$

And therefore the number is

$$= \left(10x + \frac{8}{x} \right)$$

$$= (10 \times 4 + 2)$$

$$= 42$$

Thus, the required number be 42

Answer :

Let the tens digit be x then, the unit digits $= \frac{12}{x}$

Therefore, number $= \left(10x + \frac{12}{x} \right)$

And number obtained by interchanging the digits $= \left(10 \times \frac{12}{x} + x \right)$

Then according to question

$$\left(10x + \frac{12}{x} \right) + 36 = \left(10 \times \frac{12}{x} + x \right)$$

$$\left(10x + \frac{12}{x} \right) + 36 = \left(\frac{120}{x} + x \right)$$

$$\left(10x + \frac{12}{x} \right) - \left(\frac{120}{x} + x \right) + 36 = 0$$

$$\frac{(10x^2 + 12) - (120 + x^2) + 36x}{x} = 0$$

$$10x^2 + 12 - 120 - x^2 + 36x = 0$$

$$9(x^2 + 4x - 12) = 0$$

$$x^2 + 4x - 12 = 0$$

$$x^2 - 2x + 6x - 12 = 0$$

$$x(x - 2) + 6(x - 2) = 0$$

$$(x - 2)(x + 6) = 0$$

$$(x - 2) = 0$$

$$x = 2$$

Or

$$(x + 6) = 0$$

$$x = -6$$

So, the digit can never be negative.

Therefore,

When $x = 2$ then the unit digits

$$= \frac{12}{x}$$

$$= \frac{12}{2}$$

$$= 6$$

And number

$$= \left(10x + \frac{12}{x} \right)$$

$$= (10 \times 2 + 6)$$

$$= 26$$

Thus, the required number be 26

***** END *****