



Exercise 7D

The given expression is $x^2 - 23x + 42$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = -23$$

$$\text{Product} = 42$$

Clearly, the numbers are -21 and -2 .

$$\begin{aligned}x^2 - 23x + 42 &= x^2 - 21x - 2x + 42 \\&= x(x - 21) - 2(x - 21) \\&= (x - 21)(x - 2)\end{aligned}$$

Q12

Answer :

The given expression is $x^2 - 17x + 16$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = -17$$

$$\text{Product} = 16$$

Clearly, the numbers are -16 and -1 .

$$\begin{aligned}x^2 - 17x + 16 &= x^2 - 16x - x + 16 \\&= x(x - 16) - 1(x - 16) \\&= (x - 16)(x - 1)\end{aligned}$$

Q13

Answer :

The given expression is $y^2 - 21y + 90$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = -21$$

$$\text{Product} = 90$$

Clearly, the numbers are -15 and -6 .

$$\begin{aligned}
 y^2 - 21y + 90 &= y^2 - 15y - 6y + 90 \\
 &= y(y - 15) - 6(y - 15) \\
 &= (y - 15)(y - 6)
 \end{aligned}$$

Q14

Answer :

The given expression is $x^2 - 22x + 117$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = -22$$

$$\text{Product} = 117$$

Clearly, the numbers are -13 and -9 .

$$\begin{aligned}
 x^2 - 22x + 117 &= x^2 - 13x - 9x + 117 \\
 &= x(x - 13) - 9(x - 13) \\
 &= (x - 13)(x - 9)
 \end{aligned}$$

Q15

Answer :

The given expression is $x^2 - 9x + 20$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = -9$$

$$\text{Product} = 20$$

Clearly, the numbers are -5 and -4 .

$$\begin{aligned}
 x^2 - 9x + 20 &= x^2 - 5x - 4x + 20 \\
 &= x(x - 5) - 4(x - 5) \\
 &= (x - 5)(x - 4)
 \end{aligned}$$

Q16

Answer :

The given expression is $x^2 + x - 132$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = 1 \text{ and } p$$

$$\text{Product} = -132$$

Clearly, the numbers are 12 and -11 .

$$\begin{aligned}
 x^2 + x - 132 &= x^2 + 12x - 11x - 132 \\
 &= x(x + 12) - 11(x + 12) \\
 &= (x + 12)(x - 11)
 \end{aligned}$$

Q17

Answer :

The given expression is $x^2 + 5x - 104$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = 5$$

$$\text{Product} = -104$$

Clearly, the numbers are 13 and -8 .

$$\begin{aligned}
 x^2 + 5x - 104 &= x^2 + 13x - 8x - 104 \\
 &= x(x + 13) - 8(x + 13) \\
 &= (x + 13)(x - 8)
 \end{aligned}$$

Q18

Answer :

The given expression is $y^2 + 7y - 144$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = 7$$

$$\text{Product} = -144$$

Clearly, the numbers are 16 and -9 .

$$\begin{aligned} y^2 + 7y - 144 &= y^2 + 16y - 9y - 144 \\ &= y(y + 16) - 9(y + 16) \\ &= (y + 16)(y - 9) \end{aligned}$$

Q19

Answer :

The given expression is $z^2 + 19z - 150$.

Find two numbers that follow the conditions given below :

$$\text{Sum} = 19$$

$$\text{Product} = -150$$

Clearly, the numbers are 25 and -6 .

$$\begin{aligned} z^2 + 19z - 150 &= z^2 + 25z - 6z - 150 \\ &= z(z + 25) - 6(z + 25) \\ &= (z + 25)(z - 6) \end{aligned}$$

Q20

Answer :

The given expression is $y^2 + y - 72$.

Find two numbers that follow the conditions given below :

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