Factorizations Ex 7.7 Q6

Answer :

To factorise $x^2 - 22x + 120$, we will find two numbers p and q such that $p + q = -22$ and $pq = 120$.
Now,
$(-12) + (-10) = -22$
and
$(-12) \times (-10) = 120$
Splitting the middle term $-22x$ in the given quadratic as $-12x - 10x$, we get :

$$\begin{aligned} x^2 - 22x + 12 &= x^2 - 12x - 10x + 120 \\ &= (x^2 - 12x) + (-10x + 120) \\ &= x(x - 12) - 10(x - 12) \\ &= (x - 10)(x - 12) \end{aligned}$$

Factorizations Ex 7.7 Q7

Answer :

To factorise $x^2 - 11x - 42$, we will find two numbers p and q such that $p + q = -11$ and $pq = -42$.
Now,
$3 + (-14) = -22$
and
$3 \times (-14) = 42$
Splitting the middle term $-11x$ in the given quadratic as $-14x + 3x$, we get :

$$\begin{aligned} x^2 - 11x - 42 &= x^2 - 14x + 3x - 42 \\ &= (x^2 - 14x) + (3x - 42) \\ &= x(x - 14) + 3(x - 14) \\ &= (x + 3)(x - 14) \end{aligned}$$

Factorizations Ex 7.7 Q8

Answer :

To factorise $a^2 + 2a - 3$, we will find two numbers p and q such that $p + q = 2$ and $pq = -3$.
Now,
$3 + (-1) = 2$
and
$3 \times (-1) = -3$
Splitting the middle term $2a$ in the given quadratic as $-a + 3a$, we get :

$$\begin{aligned} a^2 + 2a - 3 &= a^2 - a + 3a - 3 \\ &= (a^2 - a) + (3a - 3) \\ &= a(a - 1) + 3(a - 1) \\ &= (a + 3)(a - 1) \end{aligned}$$

Factorizations Ex 7.7 Q9

Answer :

To factorise $a^2 + 14a + 48$, we will find two numbers p and q such that $p + q = 14$ and $pq = 48$.
Now,
$8 + 6 = 14$
and
$8 \times 6 = 48$
Splitting the middle term $14a$ in the given quadratic as $8a + 6a$, we get :

$$\begin{aligned} a^2 + 14a + 48 &= a^2 + 8a + 6a + 48 \\ &= (a^2 + 8a) + (6a + 48) \\ &= a(a + 8) + 6(a + 8) \\ &= (a + 6)(a + 8) \end{aligned}$$

Factorizations Ex 7.7 Q10

Answer :

To factorise $x^2 - 4x - 21$, we will find two numbers p and q such that $p + q = -4$ and $pq = -21$.

Now,

$3 + (-7) = -4$

and

$3 \times (-7) = -21$

Splitting the middle term $-4x$ in the given quadratic as $-7x + 3x$, we get :

$$\begin{aligned} x^2 - 4x - 21 &= x^2 - 7x + 3x - 21 \\ &= (x^2 - 7x) + (3x - 21) \\ &= x(x - 7) + 3(x - 7) \\ &= (x + 3)(x - 7) \end{aligned}$$

********** END **********