Factorisation of Algebraic Expressions Ex 5.1 Q32

Answer:

The given expression to be factorized is

$7(x-2y)^2 - 25(x-2y) + 12$

Substituting $a = (x-2y)$ in the above expression, we get

$7(x-2y)^2 - 25(x-2y) + 12 = 7a^2 - 25a + 12$

This can be written in the form

$7a^2 - 25a + 12 = 7a^2 - 21a - 4a + 12$

Take common $7a$ from the first two terms and -4 from the last two terms,

$7(x-2y)^2 - 25(x-2y) + 12 = 7a(a-3) - 4(a-3)$

Finally take common $(a-3)$ from the above expression,

$7(x-2y)^2 - 25(x-2y) + 12 = (a-3)(7a-4)$

Put $a = (x-2y)$ in the above expression,

$$7(x-2y)^2 - 25(x-2y) + 12 = \{(x-2y)-3\}\{7(x-2y)-4\}$$
$$= \{(x-2y)-3\}\{(7x-14y)-4\}$$
$$= (x-2y-3)(7x-14y-4)$$

We cannot further factorize the expression.

So, the required factorization of $7(x-2y)^2 - 25(x-2y) + 12$ is $\boxed{(x-2y-3)(7x-14y-4)}$.

Factorisation of Algebraic Expressions Ex 5.1 Q33

Answer:

The given expression to be factorized is

$2(x+y)^2 - 9(x+y) - 5$

Substituting $a = (x+y)$ in the above expression, we get

$2(x+y)^2 - 9(x+y) - 5 = 2a^2 - 9a - 5$

This can be written in the form

$2a^2 - 9a - 5 = 2a^2 - 10a + a - 5$

Take common $2a$ from the first two terms and 1 from the last two terms,

$2(x+y)^2 - 9(x+y) - 5 = 2a(a-5) + 1(a-5)$

Finally take common $(a-5)$ from the above expression,

$2(x+y)^2 - 9(x+y) - 5 = (a-5)(2a+1)$

Put $a = (x+y)$. Then we have

$$2(x+y)^2 - 9(x+y) - 5 = \{(x+y)-5\}\{2(x+y)+1\}$$
$$= \{(x+y)-5\}\{(2x+2y)+1\}$$
$$= (x+y-5)(2x+2y+1)$$

We cannot further factorize the expression.

So, the required factorization of $2(x+y)^2 - 9(x+y) - 5$ is $\boxed{(x+y-5)(2x+2y+1)}$.

Factorisation of Algebraic Expressions Ex 5.1 Q34

Answer :

The area of the rectangle is

$$35y^2 + 13y - 12$$

First we will factorize the above expression. This can be written in the form

$$35y^2 + 13y - 12 = 35y^2 + 28y - 15y - 12$$

Take common $7y$ from the first two terms and -3 from the last two terms,

$$35y^2 + 13y - 12 = 7y(5y + 4) - 3(5y + 4)$$

Finally take common $(5y + 4)$ from the above expression,

$$35y^2 + 13y - 12 = (5y + 4)(7y - 3)$$

The area of a rectangle having length a and breadth b $(a \geq b)$ is ab.

Here we don't know the bigger or the smaller factor. So, the two possibilities are

(i) Length is $(5y + 4)$ and breadth is $(7y - 3)$

(ii) Length is $(7y - 3)$ and breadth is $(5y + 4)$

Factorisation of Algebraic Expressions Ex 5.1 Q35

Answer :

The volume of the cuboid is

$$3x^2 - 12x$$

First we will factorize the above expression.

Take common $3x$ from the two terms of the above expression,

$$3x^2 - 12x = 3x(x - 4)$$

The volume of a cuboid having length a, breadth b and height c is abc.

Here the word *'dimensions'* stands for the length, breadth and height of the cuboid. So, the three possibilities are

(i) Length is 3, breadth is x and height is $(x - 4)$

(ii) Length is x, breadth is $(x - 4)$ and height is 3

(iii) Length is $(x - 4)$, breadth is 3 and height is x

There are many other possibilities also, because we can consider the product of two simple factors as a single factor.

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