

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 (x-2y-3)(7x-14y-4)

Factorisation of Algebraic Expressions Ex 5.1 Q33

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 I 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 (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 ($a \ge b$) 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

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.

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