



### Factorizations Ex 7.8 Q11

**Answer :**

The given expression is  $12x^2 - 17xy + 6y^2$ .

(Coefficient of  $x^2 = 12$ , coefficient of  $x = -17y$  and constant term  $= 6y^2$ )

We will split the coefficient of  $x$  into two parts such that their sum is  $-17y$  and their product equals the product of the coefficient of  $x^2$  and the constant term i.e.,  $12 \times 6y^2 = 72y^2$ .

Now,

$$(-9y) + (-8y) = -17y$$

and

$$(-9y) \times (-8y) = 72y^2$$

Replacing the middle term  $-17xy$  by  $-9xy - 8xy$ , we get :

$$\begin{aligned} 12x^2 - 17xy + 6y^2 &= 12x^2 - 9xy - 8xy + 6y^2 \\ &= (12x^2 - 9xy) - (8xy - 6y^2) \\ &= 3x(4x - 3y) - 2y(4x - 3y) \\ &= (3x - 2y)(4x - 3y) \end{aligned}$$

### Factorizations Ex 7.8 Q12

**Answer :**

The given expression is  $6x^2 - 5xy - 6y^2$ .

(Coefficient of  $x^2 = 6$ , coefficient of  $x = -5y$  and constant term  $= -6y^2$ )

We will split the coefficient of  $x$  into two parts such that their sum is  $-5y$  and their product equals the product of the coefficient of  $x^2$  and the constant term, i.e.,  $6 \times (-6y^2) = -36y^2$ .

Now,

$$(-9y) + 4y = -5y$$

and

$$(-9y) \times 4y = -36y^2$$

Replacing the middle term  $-5xy$  by  $-9xy + 4xy$ , we get :

$$\begin{aligned} 6x^2 - 5xy - 6y^2 &= 6x^2 - 9xy + 4xy - 6y^2 \\ &= (6x^2 - 9xy) + (4xy - 6y^2) \\ &= 3x(2x - 3y) + 2y(2x - 3y) \\ &= (3x + 2y)(2x - 3y) \end{aligned}$$

### Factorizations Ex 7.8 Q13

**Answer :**

The given expression is  $6x^2 - 13xy + 2y^2$ .

(Coefficient of  $x^2 = 6$ , coefficient of  $x = -13y$  and constant term  $= 2y^2$ )

We will split the coefficient of  $x$  into two parts such that their sum is  $-13y$  and their product equals the product of the coefficient of  $x^2$  and the constant term, i.e.,  $6 \times (2y^2) = 12y^2$ .

Now,

$$(-12y) + (-y) = -13y$$

and

$$(-12y) \times (-y) = 12y^2$$

Replacing the middle term  $-13xy$  by  $-12xy - xy$ , we get :

$$\begin{aligned} 6x^2 - 13xy + 2y^2 &= 6x^2 - 12xy - xy + 2y^2 \\ &= (6x^2 - 12xy) - (xy - 2y^2) \\ &= 6x(x - 2y) - y(x - 2y) \\ &= (6x - y)(x - 2y) \end{aligned}$$

### Factorizations Ex 7.8 Q14

**Answer :**

The given expression is  $14x^2 + 11xy - 15y^2$ . (Coefficient of  $x^2 = 14$ , coefficient of  $x = 11y$  and constant term  $= -15y^2$ )

Now, we will split the coefficient of  $x$  into two parts such that their sum is  $11y$  and their product equals the product of the coefficient of  $x^2$  and the constant term, i.e.,  $14 \times (-15y^2) = -210y^2$ .

Now,

$$21y + (-10y) = 11y$$

and

$$21y \times (-10y) = -210y^2$$

Replacing the middle term  $-11xy$  by  $-10xy + 21xy$ , we get :

$$\begin{aligned} 14x^2 + 11xy - 15y^2 &= 14x^2 - 10xy + 21xy - 15y^2 \\ &= (14x^2 - 10xy) + (21xy - 15y^2) \\ &= 2x(7x - 5y) + 3y(7x - 5y) \\ &= (2x + 3y)(7x - 5y) \end{aligned}$$

Factorizations Ex 7.8 Q15

**Answer :**

The given expression is  $6a^2 + 17ab - 3b^2$ . (Coefficient of  $a^2 = 6$ , coefficient of  $a = 17b$  and constant term  $= -3b^2$ )

Now, we will split the coefficient of  $a$  into two parts such that their sum is  $17b$  and their product equals the product of the coefficient of  $a^2$  and the constant term, i.e.,  $6 \times (-3b^2) = -18b^2$ .

Now,

$$18b + (-b) = 17b$$

and

$$18b \times (-b) = -18b^2$$

Replacing the middle term  $17ab$  by  $-ab + 18ab$ , we get :

$$\begin{aligned} 6a^2 + 17ab - 3b^2 &= 6a^2 - ab + 18ab - 3b^2 \\ &= (6a^2 - ab) + (18ab - 3b^2) \\ &= a(6a - b) + 3b(6a - b) \\ &= (a + 3b)(6a - b) \end{aligned}$$

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