

## EXERCISE 7.3

**Factorize each of the following algebraic expressions:**

**1.  $6x(2x - y) + 7y(2x - y)$**

**Solution:**

We have,

$$6x(2x - y) + 7y(2x - y)$$

By taking  $(2x - y)$  as common we get,

$$(6x + 7y)(2x - y)$$

**2.  $2r(y - x) + s(x - y)$**

**Solution:**

We have,

$$2r(y - x) + s(x - y)$$

By taking  $(-1)$  as common we get,

$$-2r(x - y) + s(x - y)$$

By taking  $(x - y)$  as common we get,

$$(x - y)(-2r + s)$$

$$(x - y)(s - 2r)$$

**3.  $7a(2x - 3) + 3b(2x - 3)$**

**Solution:**

We have,

$$7a(2x - 3) + 3b(2x - 3)$$

By taking  $(2x - 3)$  as common we get,

$$(7a + 3b)(2x - 3)$$

**4.  $9a(6a - 5b) - 12a^2(6a - 5b)$**

**Solution:**

We have,

$$9a(6a - 5b) - 12a^2(6a - 5b)$$

By taking  $(6a - 5b)$  as common we get,

$$(9a - 12a^2)(6a - 5b)$$

$$3a(3 - 4a)(6a - 5b)$$

**5.  $5(x - 2y)^2 + 3(x - 2y)$**

**Solution:**

We have,

$$5(x - 2y)^2 + 3(x - 2y)$$

By taking  $(x - 2y)$  as common we get,  
 $(x - 2y) [5(x - 2y) + 3]$   
 $(x - 2y) (5x - 10y + 3)$

**6.  $16(2l - 3m)^2 - 12(3m - 2l)$**

**Solution:**

We have,

$$16(2l - 3m)^2 - 12(3m - 2l)$$

By taking  $(-1)$  as common we get,

$$16(2l - 3m)^2 + 12(2l - 3m)$$

By taking  $4(2l - 3m)$  as common we get,

$$4(2l - 3m) [4(2l - 3m) + 3]$$

$$4(2l - 3m) (8l - 12m + 3)$$

**7.  $3a(x - 2y) - b(x - 2y)$**

**Solution:**

We have,

$$3a(x - 2y) - b(x - 2y)$$

By taking  $(x - 2y)$  as common we get,

$$(3a - b)(x - 2y)$$

**8.  $a^2(x + y) + b^2(x + y) + c^2(x + y)$**

**Solution:**

We have,

$$a^2(x + y) + b^2(x + y) + c^2(x + y)$$

By taking  $(x + y)$  as common we get,

$$(a^2 + b^2 + c^2)(x + y)$$

**9.  $(x - y)^2 + (x - y)$**

**Solution:**

We have,

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

By taking  $(x - y)$  as common we get,

$$(x - y)(x - y + 1)$$

**10.  $6(a + 2b) - 4(a + 2b)^2$**

**Solution:**

We have,

$$6(a + 2b) - 4(a + 2b)^2$$

By taking  $(a + 2b)$  as common we get,  
 $[6 - 4(a + 2b)](a + 2b)$   
 $(6 - 4a - 8b)(a + 2b)$   
 $2(3 - 2a - 4b)(a + 2b)$

**11.  $a(x - y) + 2b(y - x) + c(x - y)^2$**

**Solution:**

We have,

$$a(x - y) + 2b(y - x) + c(x - y)^2$$

By taking  $(-1)$  as common we get,

$$a(x - y) - 2b(x - y) + c(x - y)^2$$

By taking  $(x - y)$  as common we get,

$$[a - 2b + c(x - y)](x - y)$$

$$(x - y)(a - 2b + cx - cy)$$

**12.  $-4(x - 2y)^2 + 8(x - 2y)$**

**Solution:**

We have,

$$-4(x - 2y)^2 + 8(x - 2y)$$

By taking  $4(x - 2y)$  as common we get,

$$[-(x - 2y) + 2]4(x - 2y)$$

$$4(x - 2y)(-x + 2y + 2)$$

**13.  $x^3(a - 2b) + x^2(a - 2b)$**

**Solution:**

We have,

$$x^3(a - 2b) + x^2(a - 2b)$$

By taking  $x^2(a - 2b)$  as common we get,

$$(x + 1)[x^2(a - 2b)]$$

$$x^2(a - 2b)(x + 1)$$

**14.  $(2x - 3y)(a + b) + (3x - 2y)(a + b)$**

**Solution:**

We have,

$$(2x - 3y)(a + b) + (3x - 2y)(a + b)$$

By taking  $(a + b)$  as common we get,

$$(a + b)[(2x - 3y) + (3x - 2y)]$$

$$(a + b)[2x - 3y + 3x - 2y]$$

$$(a + b)[5x - 5y]$$

$$(a + b) 5(x - y)$$

**15.  $4(x + y) (3a - b) + 6(x + y) (2b - 3a)$**

**Solution:**

We have,

$$4(x + y) (3a - b) + 6(x + y) (2b - 3a)$$

By taking  $(x + y)$  as common we get,

$$(x + y) [4(3a - b) + 6(2b - 3a)]$$

$$(x + y) [12a - 4b + 12b - 18a]$$

$$(x + y) [-6a + 8b]$$

$$(x + y) 2(-3a + 4b)$$

$$(x + y) 2(4b - 3a)$$



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