

CLASS NOTES

Class: VIII

Topic: Ch. 14 FACTORISATION

Subject: Mathematics

EXERCISE 14.1

Q1. Find the common factors of the given terms:

Solution:

(i) 12x, 36

$(2 \times 2 \times 3 \times x)$ and $(2 \times 2 \times 3 \times 3)$

Common factors are $2 \times 2 \times 3 = 12$

Hence, the common factor = 12

(ii) 2y, 22xy

$= (2 \times y)$ and $(2 \times 11 \times x \times y)$

Common factors are $2 \times y = 2y$

Hence, the common factor = 2y

(iii) 14pq, 28p²q²

$= (2 \times 7 \times p \times q)$ and $(2 \times 2 \times 7 \times p \times p \times q \times q)$

Common factors are $2 \times 7 \times p \times q = 14pq$

Hence, the common factor = 14pq

(iv) 2x, 3x², 4

$= (2 \times x)$, $(3 \times x \times x)$ and (2×2)

Common factor is 1

Hence, the common factor = 1 [\because 1 is a factor of every number]

(v) 6abc, 24ab², 12a²b

$= (2 \times 3 \times a \times b \times c)$, $(2 \times 2 \times 2 \times 3 \times a \times b \times b)$ and $(2 \times 2 \times 3 \times a \times a \times b)$

Common factors are $2 \times 3 \times a \times b = 6ab$

Hence, the common factor = 6ab

(vi) 16x³, -4x², 32x

$= (2 \times 2 \times 2 \times 2 \times x \times x \times x)$, $-(2 \times 2 \times x \times x)$, $(2 \times 2 \times 2 \times 2 \times 2 \times x)$

Common factors are $2 \times 2 \times x = 4x$

Hence, the common factor = 4x

(vii) 10pq, 20qr, 30rp

$= (2 \times 5 \times p \times q)$, $(2 \times 2 \times 5 \times q \times r)$, $(2 \times 3 \times 5 \times r \times p)$

Common factors are $2 \times 5 = 10$

Hence, the common factor = 10

(viii) 3x²y², 10x³y², 6x²y²z

$= (3 \times x \times x \times y \times y)$, $(2 \times 5 \times x \times x \times x \times y \times y)$, $(2 \times 3 \times x \times x \times y \times y \times z)$

Common factors are $x \times x \times y \times y = x^2y^2$

Hence, the common factor = x^2y^2 .

Q3. Factorise:

Solution:

(i) $x^2 + xy + 8x + 8y$

Grouping the terms, we have

$x^2 + xy + 8x + 8y$

$= x(x + y) + 8(x + y)$

$= (x + y)(x + 8)$

Hence, the required factors = $(x + y)(x + 8)$

(ii) $15xy - 6x + 5y - 2$

Grouping the terms, we have

$(15xy - 6x) + (5y - 2)$

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

$= (5y - 2)(3x + 1)$

(iii) $ax + bx - ay - by$

Grouping the terms, we have

$= (ax - ay) + (bx - by)$

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

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

Hence, the required factors = $(x - y)(a + b)$

(iv) $15pq + 15 + 9q + 25p$

Grouping the terms, we have

$= (15pq + 25p) + (9q + 15)$

$= 5p(3q + 5) + 3(3q + 5)$

$= (3q + 5)(5p + 3)$

Hence, the required factors =

$(3q + 5)(5p + 3)$

(v) $z - 7 + 7xy - xyz$

Grouping the terms, we have

$= (-xyz + 7xy) + (z - 7)$

$= -xy(z - 7) + 1(z - 7)$

$= (-xy + 1)(z - 7)$

Hence the required factor = $(1 - xy)(z - 7)$

Q2. Factorise the following expressions.

Solution:

(i) $7x - 42 = 7(x - 6)$

(ii) $6p - 12q = 6(p - 2q)$

(iii) $7a^2 + 14a = 7a(a + 2)$

(iv) $-16z + 20z^3 = 4z(-4 + 5z^2)$

(v) $20l^2m + 30alm = 10lm(2l + 3a)$

(vi) $5x^2y - 15xy^2 = 5xy(x - 3y)$

(vii) $10a^2 - 15b^2 + 20c^2 = 5(2a^2 - 3b^2 + 4c^2)$

(viii) $-4a^2 + 4ab - 4ca = 4a(-a + b - c)$

(ix) $x^2yz + xy^2z + xyz^2 = xyz(x + y + z)$

(x) $ax^2y + bxy^2 + cxyz = xy(ax + by + cz)$

Note: Solve the questions neatly in your fair copy.

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