

Exercise 7.2

Factorize the following.

Q.1 $3x-9$

Sol: HCF of $3x$ and 9 is 3

$$\therefore 3x-9 = 3(x-3)$$

Q.2 $5x-15x^2$

Sol: $\therefore$ HCF ($5x, 15x^2$) = $5x$

therefore $\therefore 5x-15x^2 = 5x(x-3)$

Q.3 $20a^{12}b^{12}-15a^8b^4$

Sol: HCF ($20a^{12}b^{12}, 15a^8b^4$) = $5a^8b^4$

$$\therefore 20a^{12}b^{12}-15a^8b^4 = 5a^8b^4(4a^4b^8-3)$$

Q.4 $72x^6y^7-96x^7y^6$

Sol: $72x^6y^7-96x^7y^6 = 24x^6y^6(3y-4x)$

Q.5 $20x^3-40x^2+80x$

Sol: $20x(x^2-2x+4)$

Q.6 $2x^3y^2 - 4x^2y^3 + 8xy^4$

Sol: $HCF(2x^3y^2, 4x^2y^3, 8xy^4) = 2xy^2$

$\therefore 2x^3y^2 - 4x^2y^3 + 8xy^4$
 $= 2xy^2(x^2 - 2xy + 4y^2)$

Q.7 $10m^3n^2 + 15m^4n - 20m^2n^3$

Sol: $HCF(10m^3n^2, 15m^4n, 20m^2n^3) = 5m^2n$

$\therefore 10m^3n^2 + 15m^4n - 20m^2n^3 = 5m^2n(2mn + 3m^2 - 4n^2)$

Q.8 $2a^4b^4 - 3a^3b^5 + 4a^2b^5$

Sol: $\therefore HCF(2a^4b^4, 3a^3b^5, 4a^2b^5) = a^2b^4$

$\therefore 2a^4b^4 - 3a^3b^5 + 4a^2b^5 = a^2b^4(2a^2 - 3ab + 4b)$

Q.9 $28a^2 + 14a^2b^2 - 21a^4$

Sol: $HCF(28a^2, 14a^2b^2, 21a^4) = 7a^2$

$\therefore 28a^2 + 14a^2b^2 - 21a^4 = 7a^2(4 + 2b^2 - 3a^2)$

Q.10 $a^4b - 3a^2b^2 - 6ab^3$

Sol: $HCF(a^4b, 3a^2b^2, 6ab^3) = ab$

$$\therefore a^4b - 3a^2b^2 - 6ab^3 = ab(a^3 - 3ab - 6b^2)$$

⑪ $2l^2mn - 3lm^2n + 4lmn^2$

Sol: $HCF(2l^2mn, 3lm^2n, 4lmn^2) = lmn$

$$\therefore 2l^2mn - 3lm^2n + 4lmn^2 = lmn(2l - 3m + 4n)$$

⑫ $x^4y^2 - x^2y^4 - x^4y^4$

Sol: $HCF(x^4y^2, x^2y^4, x^4y^4) = x^2y^2$

$$\therefore x^4y^2 - x^2y^4 - x^4y^4 = x^2y^2(x^2 - y^2 - x^2y^2)$$

⑬ $9x^2y + 3axy$

Sol: $9x^2y + 3axy = 3xy(3x + a)$

⑭ $16m - 4m^2 = 4m(4 - m)$

⑮ $-4a^2 + 4ab - 4ca$

Sol: $HCF(4a^2, 4ab, 4ca) = 4a$

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

16 $x^2yz + xy^2z + xyz^2 = xyz(x + y + z)$

17 $ax^2y + bxy^2 + cxyz = xy(ax + by + cz)$