Chapter-7

Factorisation

Exercise 7.1

Find the greatest common factor (GCF/HCF) of the following polynomials

1. $2x^2$ and $12x^2$

Solution HCF $(2, 12) \times$ HCF (x^2, x^2)

$= 2 \times x^2 = 2x^2$

2. $6x^3y$, and $18x^2y^3$

Sol: HCF $(6x^3y, 18x^2y^3)$ = HCF $(6, 18) \times$ HCF (x^3y, x^2y^3)

$= 6 \times x^2y$

$= 6x^2y$

3. HCF $(7x, 21x^2, 14xy^2)$ = HCF $(7, 21, 14)$ $\times$ HCF (x, x^2, xy^2)

$= 7 \times x$

$= 7x$

4 HCF $(42x^2yz, 63x^3y^2z^3)$

$=$ HCF $(42, 63) \times$ HCF $(x^2yz, x^3y^2z^3)$

$= 7 \times x^2yz = 7x^2yz$

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5. $HCF(12ax^2, 6a^2x^3, 2a^3x^5)$

$= HCF(12,6,2) \times HCF(ax^2, a^2x^3, a^3x^5)$

$= 2 \times ax^2$

$= 2ax^2$

6 $HCF(9x^2, 15x^2y^3, 6xy^2, 21x^2y^2)$

$= HCF(9,15,6,21) \times HCF(x^2, x^2y^3, xy^2, x^2y^2)$

$= 3 \times x$

$= 3x$

7 $HCF(4a^2b^3, -12a^3b, 18a^4b^3)$

$= HCF(4,-12,18) \times HCF(a^2b^3, a^3b, a^4b^3)$

$= -2a^2b$

8 $HCF(6x^2y^2, 9xy^3, 3x^3y^2)$

$= HCF(6,9,3) \times HCF(x^2y^2, xy^3, x^3y^2)$

$= 3 \times xy^2 = 3xy^2$

(9) a^2b^3, a^3b^2

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

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(10) HCF $(36a^2b^2c^4, 54a^5c^2, 90a^4b^2c^2)$

$= HCF(36,54,90) \times HCF(a^2b^2c^4, a^5c^2, b^2c^2)$

$= 18 \times a^2c^2$

$= 18a^2c^2$

(11) HCF $(x^3, -yx^2)$

$= HCF(1,-1) \times LCM(x^3, yx^2)$

$= +1x^2$

$= +x^2$

(12) HCF $(15a^3, -45a^2, -150a)$

$= HCF(15,45,150) \times HCF(a^3, a^2, a)$

$= 15a$

(13) HCF $(2x^3y^2, 10x^2y^3, 14xy)$

$= HCF(2,10,14) \times HCF(x^3y^2, x^2y^3, xy)$

$= 2xy$

(14) HCF $(14x^3y^5, 10x^5y^3, 2x^2y^2)$

$= HCF(14,10,2) \times HCF(x^3y^5, x^5y^3, x^2y^2)$

$= 2x^2y^2$

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Find the greatest common factor of the terms in each of the following expressions:

15 $5a^4 + 10a^3 - 15a^2$

Sol: HCF $(5a^4, 10a^3, 15a^2)$

$= HCF(5, 10, 15) \times HCF(a^4, a^3, a^2)$

$= 5a^2$

16 $2xyz + 3x^2y + 4y^2$

Sol: HCF $(2xyz, 3x^2y, 4y^2)$

$= HCF(2, 3, 4) \times HCF(xyz, x^2y, y^2)$

$= 1 \times y = y$

17 $3a^2b^2 + 4b^2c^2 + 12a^2b^2c^2$

Sol: HCF $(3a^2b^2, 4b^2c^2, 12a^2b^2c^2)$

$= HCF(3, 4, 12) \times HCF(a^2b^2, b^2c^2, a^2b^2c^2)$

$= 1 \times b^2$

$= b^2$

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