EXERCISE 7.1   PAGE NO: 7.3

Find the greatest common factor (GCF/HCF) of the following polynomials: (1-14)

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

Solution:

We know that the numerical coefficients of given numerical are 2 and 12

The greatest common factor of 2 and 12 is 2

The common literals appearing in given monomial is x

The smallest power of x in two monomials is 2

The monomial of common literals with smallest power is x^2

∴ The greatest common factor $= 2x^2$

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

Solution:

We know that the numerical coefficients of given numerical are 6 and18

The greatest common factor of 6 and 18 is 6

Common literals appearing in given numerical are x and y

Smallest power of x in three monomial is 2

Smallest power of y in three monomial is 1

Monomial of common literals with smallest power is x^2y

∴ The greatest common factor $= 6x^2y$

3. $7x$, $21x^2$ and $14xy^2$

Solution:

We know that the numerical coefficients of given numerical are 7, 21 and 14

Greatest common factor of 7, 21 and 14 is 7

Common literals appearing in given numerical are x and y

Smallest power of x in three monomials is 1

Smallest power of y in three monomials is 0

Monomials of common literals with smallest power is x

∴ The greatest common factor $= 7x$

4. $42x^2yz$ and $63x^3y^2z^3$

Solution:

We know that the numerical coefficients of given numerical are 42 and 63.

Greatest common factor of 42, 63 is 21.

Common literals appearing in given numerical are x, y and z

Smallest power of x in two monomials is 2

Smallest power of y in two monomials is 1
Smallest power of z in two monomials is 1
Monomials of common literals with smallest power is x^2yz
∴ The greatest common factor = $21x^2yz$

5. $12ax^2$, $6a^2x^3$ and $2a^3x^5$
Solution:
We know that the numerical coefficients of given numerical are 12, 6 and 2
Greatest common factor of 12, 6 and 2 is 2.
Common literals appearing in given numerical are a and x
Smallest power of x in three monomials is 2
Smallest power of a in three monomials is 1
Monomials of common literals with smallest power is ax^2
∴ The greatest common factor = $2ax^2$

6. $9x^2$, $15x^2y^3$, $6xy^2$ and $21x^2y^2$
Solution:
We know that the numerical coefficients of given numerical are 9, 15, 16 and 21
Greatest common factor of 9, 15, 16 and 21 is 3.
Common literals appearing in given numerical are x and y
Smallest power of x in four monomials is 1
Smallest power of y in four monomials is 0
Monomials of common literals with smallest power is x
∴ The greatest common factor = 3x

7. $4a^2b^3$, $-12a^3b$, $18a^4b^3$
Solution:
We know that the numerical coefficients of given numerical are 4, -12 and 18.
Greatest common factor of 4, -12 and 18 is 2.
Common literals appearing in given numerical are a and b
Smallest power of a in three monomials is 2
Smallest power of b in three monomials is 1
Monomials of common literals with smallest power is a^2b
∴ The greatest common factor = $2a^2b$

8. $6x^2y^2$, $9xy^3$, $3x^3y^2$
Solution:
We know that the numerical coefficients of given numerical are 6, 9 and 3
Greatest common factor of 6, 9 and 3 is 3.

Common literals appearing in given numerical are x and y
Smallest power of x in three monomials is 1
Smallest power of y in three monomials is 2
Monomials of common literals with smallest power is xy^2
∴ The greatest common factor = $3xy^2$

9. a^2b^3, a^3b^2
Solution:
We know that the numerical coefficients of given numerical are 0
Common literals appearing in given numerical are a and b
Smallest power of a in two monomials = 2
Smallest power of b in two monomials = 2
Monomials of common literals with smallest power is a^2b^2
∴ The greatest common factor = a^2b^2

10. $36a^2b^2c^4$, $54a^5c^2$, $90a^4b^2c^2$
Solution:
We know that the numerical coefficients of given numerical are 36, 54 and 90
Greatest common factor of 36, 54 and 90 is 18.
Common literals appearing in given numerical are a, b and c
Smallest power of a in three monomials is 2
Smallest power of b in three monomials is 0
Smallest power of c in three monomials is 2
Monomials of common literals with smallest power is a^2c^2
∴ The greatest common factor = $18a^2c^2$

11. x^3, $-yx^2$
Solution:
We know that the numerical coefficients of given numerical are 0
Common literals appearing in given numerical are x and y
Smallest power of x in two monomials is 2
Smallest power of y in two monomials is 0
Monomials of common literals with smallest power is x^2
∴ The greatest common factor = x^2

12. $15a^3$, $-45a^2$, $-150a$
Solution:
We know that the numerical coefficients of given numerical are 15, -45 and 150
Greatest common factor of 15, -45 and 150 is 15.

Common literals appearing in given numerical is a
Smallest power of a in three monomials is 1
Monomials of common literals with smallest power is a
∴ The greatest common factor = 15a

13. $2x^3y^2$, $10x^2y^3$, $14xy$
Solution:
We know that the numerical coefficients of given numerical are 2, 10 and 14.
Greatest common factor of 2, 10 and 14 is 2.
Common literals appearing in given numerical are x and y
Smallest power of x in three monomials is 1
Smallest power of y in three monomials is 1
Monomials of common literals with smallest power is xy
∴ The greatest common factor = 2xy

14. $14x^3y^5$, $10x^5y^3$, $2x^2y^2$
Solution:
We know that the numerical coefficients of given numerical are 14, 10 and 2.
Greatest common factor of 14, 10 and 2 is 2.
Common literals appearing in given numerical are x and y
Smallest power of x in three monomials is 2
Smallest power of y in three monomials is 2
Monomials of common literals with smallest power is x^2y^2
∴ The greatest common factor = $2x^2y^2$

Find the greatest common factor of the terms in each of the following expressions:
15. $5a^4 + 10a^3 - 15a^2$
Solution:
The greatest common factor of the three terms is $5a^2$.

16. $2xyz + 3x^2y + 4y^2$
Solution:
The greatest common factor of the three terms is y.

17. $3a^2b^2 + 4b^2c^2 + 12a^2b^2c^2$
Solution:
The greatest common factor of the three terms is b^2.