

**CLASS NOTES-ANSWERS****EXERCISE 3.6**

1. Find the HCF of the following numbers:

(a) 18, 48	(b) 30, 42	(c) 18, 60	(d) 27, 63
(e) 36, 84	(f) 34, 102	(g) 70, 105, 175	
(h) 91, 112, 49	(i) 18, 54, 81	(j) 12, 45, 75	

Answer:

(a) 18, 48

The prime factorizations of 18 and 48 are as follows:

$$18 = 2 \times 3 \times 3$$

$$48 = 2 \times 2 \times 2 \times 2 \times 3$$

The common factors are 2 and 3.

$$\text{HCF} = 2 \times 3 = 6$$

Hence, the HCF of 18, 48 is 6

(b) 30, 42

The prime factorizations of 30 and 42 are as follows:

$$30 = 2 \times 3 \times 5$$

$$42 = 2 \times 3 \times 7$$

The common factors are 2 and 3.

$$\text{HCF} = 2 \times 3 = 6$$

Hence, the HCF of 30, 42 is 6.

(c) 18, 60



The prime factorizations of 18 and 60 are as follows:

$$18 = 2 \times 3 \times 3$$

$$60 = 2 \times 2 \times 3 \times 5$$

The common factors are 2 and 3.

$$\text{HCF} = 2 \times 3 = 6$$

Hence, the HCF of 18, 60 is 6.

(d) 27, 63

The prime factorizations of 27 and 63 are as follows:

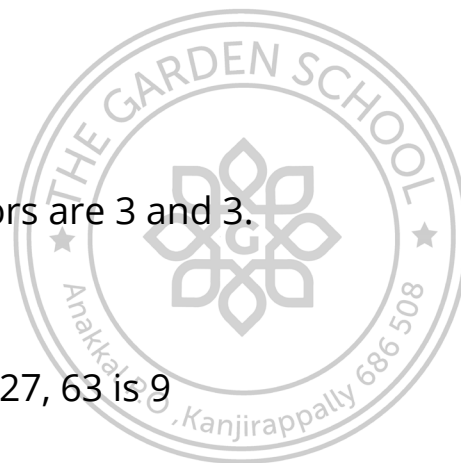
$$27 = 3 \times 3 \times 3$$

$$63 = 3 \times 3 \times 7$$

The common factors are 3 and 3.

$$\text{HCF} = 3 \times 3 = 9$$

Hence, the HCF of 27, 63 is 9.



(e) 36, 84

The prime factorizations of 36 and 84 are as follows:

$$36 = 2 \times 2 \times 3 \times 3$$

$$84 = 2 \times 2 \times 3 \times 7$$

The common factors are 2, 2, and 3.

$$\text{HCF} = 2 \times 2 \times 3 = 12$$

Hence, the HCF of 36, 84 is 12

(f) 34, 102



The prime factorizations of 34 and 102 are as follows:

$$34 = 2 \times 17$$

$$102 = 2 \times 3 \times 17$$

The common factors are 2 and 17.

$$\text{HCF} = 2 \times 17 = 34$$

Hence, the HCF of 34, 102 is 34

(g) 70, 105, 175

The prime factorizations of 70, 105, and 175 are as follows:

$$70 = 2 \times 5 \times 7$$

$$105 = 3 \times 5 \times 7$$

$$175 = 5 \times 5 \times 7$$

The common factors are 5 and 7.

$$\text{HCF} = 5 \times 7 = 35$$

Hence, the HCF of 70, 105, 175 is 35

(h) 91, 112, 49

The prime factorizations of 91, 112, and 49 are as follows:

$$91 = 7 \times 13$$

$$112 = 2 \times 2 \times 2 \times 2 \times 7$$

$$49 = 7 \times 7$$

The common factors are 7.



$$\text{HCF} = 7$$

Hence, the HCF of 91, 112, 49 is 7

(i) 18, 54, 81

The prime factorizations of 18, 54, and 81 are as follows:

$$18 = 2 \times 3 \times 3$$

$$54 = 2 \times 3 \times 3 \times 3$$

$$81 = 3 \times 3 \times 3 \times 3$$

The common factors are 3 and 3.

$$\text{HCF} = 3 \times 3 = 9$$

Hence, the HCF of 18, 54, 81 is 9

(j) 12, 45, 75

The prime factorizations of 12, 45 and 75 are as follows:

$$12 = 2 \times 2 \times 3$$

$$45 = 3 \times 3 \times 5$$

$$75 = 3 \times 5 \times 5$$

The common factors are 3.

$$\text{HCF} = 3$$

Hence, the HCF of 12, 45, 75 is 3.

2. What is the HCF of two consecutive:

(a) numbers?

(b) even numbers?

(c) odd numbers?



Answer:

(a) When calculating the HCF of two consecutive numbers, the common factor is 1.

Example: Consecutive numbers = 4, 5

Factors of 4 = 1, 2, 4

Factors of 5 = 1, 5

The HCF of 4 and 5 is 1

Hence, HCF of any two consecutive numbers is equal to 1.

(b) When calculating the HCF of two consecutive even numbers, the common factor is 2.

Example: Consecutive even numbers = 2, 4

Factors of 2 = 1, 2

Factors of 4 = 1, 2, 4

The HCF of 2 and 4 is 2

Hence, HCF of two consecutive even numbers is equal to 2.

(c) When calculating the HCF of two consecutive odd numbers, the common factor is 1.

Example: Consecutive odd numbers = 3, 5

Factors of 3 = 1, 3

Factors of 5 = 1, 5

The HCF of 3 and 5 is 1.

Hence, the HCF of two consecutive odd numbers is equal to 1.



3. HCF of co-prime numbers 4 and 15 was found as follows by factorisation:

$4 = 2 \times 2$ and $15 = 3 \times 5$ since there is no common prime factor, so HCF of 4 and 15 is 0. Is the answer correct? If not, what is the correct HCF?

Answer:

$4 = 2 \times 2$ and $15 = 3 \times 5$.

Since there are no common prime factors, so HCF of 4 and 15 is 0 is incorrect.

There are no prime numbers or prime factors common to 4 and 15.

Therefore their HCF is the universal factor 1.

Hence, 4 and 15 are co-prime numbers having HCF as 1 and not 0.

