Class : 10   **Sub : Mathematics Worksheet**   **Ch : 1 (Real Numbers)**

SECTION A   (12 x 1 = 12)

Choose the correct options to fill in the blanks.

1 For any two positive integers a and b _____.

a) HCF (a, b) * LCM (a, b) = $\frac{a}{b}$ b) HCF (a, b) * LCM (a, b) = a*b

c) Both a and b   d) neither a nor b

2 The HCF of 96 and 404 is _____.

a) 2   b) 4   c) 6   d) 8

3 The LCM of 96 and 404 is _____.

a) 96   b) 404   c) 9696   d) 969

4) The HCF of 6, 72 and 120 is _____.

a) 2   b) 3   c) 6   d) 12

5) The LCM of 6, 72 and 120 is _____.

a) 72   b) 120   c) 360   d) none

6) Let p be the prime number, if p divides a square then (a is the positive integer) _____.

a) a divides p   b) p divides a   c) Both a and b   d) None

7) Every composite number can be expressed as a product of primes and this _____.

a) factorisation is not unique   b) factorisation is unique

c) Both a and b   d) None

8 If two positive integers A and B can be expressed as A = xy^3 and B = x^4y^2z; x, y being prime numbers then HCF (A, B) is _____.
(a) xy²   (b) x^6y²z   (c) x^4y^3   (d) x^4y^3z

9 . If the HCF of 408 and 1032 is expressible in the form 1032 x 2 + 408 × p, then the value of p is _____.
(a) 5   (b) -5   (c) 4   (d) -4

10 . If LCM (77, 99) = 693, then HCF (77, 99) is
(a) 11   (b) 7   (c) 9   (d) 22

11. Assertion: If HCF (26,169) =13 then LCM (26,169)= 338
Reason: HCF(a*b) *LCM(a*b)=a*b
a) both Assertion and reason are correct and reason is correct explanation for assertion
b) both Assertion and reason are correct but reason is not correct explanation for Assertion
c) Assertion is correct but reason is false
d) both Assertion and reason are false.

12. Assertion: If the LCM of a and 18 is 36 and HCF of a and 18 is 2 then a=4
Reason: 2*36=a*18 2*36/18=a a=4
a) both Assertion and reason are correct and reason is correct explanation for assertion
b) both Assertion and reason are correct but reason is not correct explanation for Assertion
c) Assertion is correct but reason is false
d) both Assertion and reason are false.

SECTION B (2 x 10 = 20)

1. Find the LCM and HCF of 32 and 48 and verify that LCM $\times$ HCF = product of the two numbers.
2. Explain why $(17 \times 5 \times 11 \times 3 \times 2 + 2 \times 11)$ is a composite number.
3. Check whether 4^n can end with the digit 0 for any natural number n.
4. Prove $3 + \sqrt{2}$ is irrational.
5. Find HCF and LCM of 56 and 28 by prime factorisation method.
6. If the HCF of 210 and 55 is expressible in the form 210 x 5 + 55y find y.
7. Determine the values of p and q so that the prime factorisation of 2520 is expressible as 2^3 ^p x q x 7.
8. Find the LCM and HCF of $a^5 \times b^2 \times c^2 \times d^5$ and $a^7 \times b^3 \times e \times f^3$ where a, b, c, d, e, and f are prime.
9. Anish goes fishing every 5th day and Balaji goes fishing every 7th day. If Anish and Balaji both went fishing today, how many days until they will go fishing on the same day again?
10. The LCM of 2 numbers is 14 times their HCF. The sum of LCM and HCF is 600. If one number is 280, then find the other number.

SECTION C (3 X 5 = 15)

1. Prove that $\sqrt{5}$ is irrational.
2. Three bells toll at intervals of 15, 12, 18 minutes respectively. If they start tolling together at 6 p.m., at what time will they next toll together?
3. The length, breadth, and height of a room are 8 m 40 cm, 6 m 15 cm and 3 m 45 cm respectively. Find the length of the longest rod that can measure the dimensions of the room exactly.
4. Hamida, Shruti, and Ryan start preparing cards for all the teachers for teacher's day. In order to complete one card, they take 10, 16 and 20 minutes respectively.

If all of them started together, after what time will they start preparing a new card together?

5. If two positive integers x and y are expressible in terms of primes as x = p^2q^3 and y = p^3q, what can you say about their LCM and HCF. Is LCM a multiple of HCF? Explain

SECTION D (5 X 5 = 25)

1. Prove √5 is irational. Also prove 3 + √5 is irrational.
2. Our milkman has two vessels containing 720 ml and 405 ml of milk respectively. Milk from these containers is poured into glasses of equal capacity to their brim. Find the minimum number of glasses that can be filled.
3. There are 104 students in class X and 96 students in class IX in a school. In a house examination, the students are to be evenly seated in parallel rows such that no two adjacent rows are of the same class. Find the maximum number of parallel rows of each class for the seating arrangement. Also, find the number of students of class IX and also of class X in a row.
4. Show that (√2+√3)² is an irrational number.
5. Show that reciprocal of 3+2√3 is an irrational number.

SECTION E (4 X 2 = 8)

Case Study – 1
The workers at a petrol pump are transferring petrol from tanker to storage. On Monday, there were two tankers containing 850 litres and 680 litres of petrol respectively.

(i) What is the maximum capacity of a container which can measure the petrol of either tanker in exact number of time? (2)

(ii) How can 680 be expressed as a product of its primes? (1)

(iii) If p and q are positive integers such that p = a³b² and q = a²b³, where a, b are prime numbers, then what is the LCM (p, q)? (1)

Case Study – 2
We all know that morning walk is good for health. In a morning walk, three friends Anjali, Sofia, and Angelina step off together. Their steps measure 80 cm, 85 cm, and 90 cm. respectively.
(i) What is the minimum distance each should walk so that they can cover the distance in complete steps? (2)
(ii) What is the HCF of 80, 85, and 90? (1)
(iii) How can 90 can be expressed as a product of its primes? (1)