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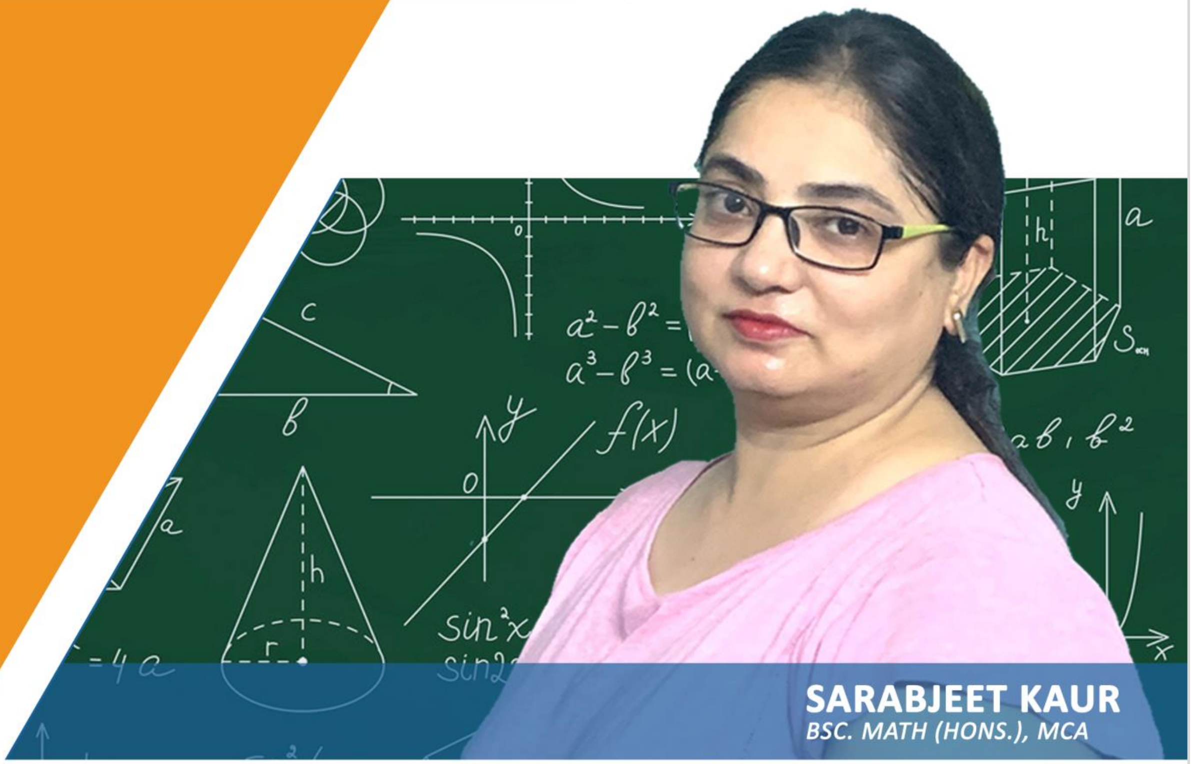

GRADE 10TH MATHS

CHAPTER 1

REAL NUMBERS

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SECTION-A

Very Short Answer Type Questions :

1. Express each of the following numbers as a product of its prime factors.

   (i) 240

   (ii) 289

   (iii) 10010

   (iv) 8975

   (v) 111111

2. Without actually performing the division, state whether the following rational numbers will have terminating decimal expansion or non-terminating repeating decimal expansion.

   (i) $\frac{15}{80}$ (ii) $\frac{14}{320}$

   (iii) $\frac{131}{165000}$ (iv) $\frac{7}{105}$

   (v) $\frac{77}{1890}$ (vi) $\frac{31}{2000}$

   (vii) $\frac{32}{455}$ (viii) $\frac{25}{50}$

   (ix) $\frac{13}{343}$ (x) $\frac{81}{1800}$

3. Classify the following numbers as rational or irrational.

   (i) $\sqrt{289}$

   (ii) 0.3792

(iii) 6.428428...

(iv) 1.101001000100001...

(v) $56.\overline{1234}$

(vi) 1.1234567891235....

4. Check whether $6 - \sqrt{5}$ is rational or Irrational.

5. Find the LCM and HCF of the following integers by applying the prime factorisation method.

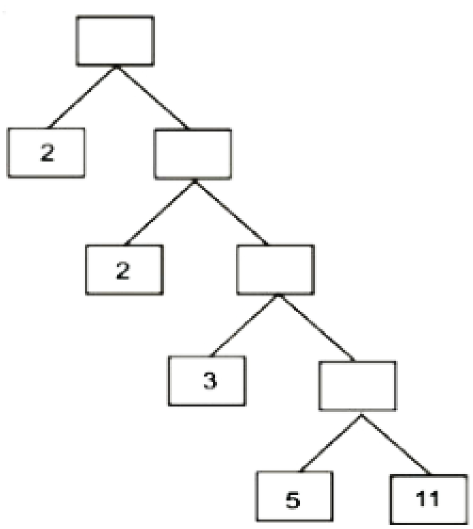
   (i) 21, 105, 75

   (ii) 25, 60, 85

   (iii) 65, 95, 105

6. Explain why $3 \times 7 \times 13 \times 19 + 26$ is a composite number.

   Find the missing numbers in the following factorisation.



8. The decimal expansion of the rational number $\frac{47}{5000}$, will terminate after how many places of decimal?

Short Answer Type Questions :

1. Find the LCM and HCF of the following pairs of integers using fundamental theorem of arithmetic and verify that LCM × HCF = Product of the two numbers.
   - (i) 78 and 117
   - (ii) 184 and 1020
   - (iii) 192 and 2880
   - (iv) 720 and 540
   - (v) 552 and 1024
2. (i) Check whether $(20)^n$ can end with the digit 5 for any natural number n.
   (ii) Prove that $(12)^n$ cannot end with the digit 0 for any natural number n.
3. Use Euclid's division algorithm to find the HCF of the following :
   - (i) 275, 1375
   - (ii) 840, 1320
   - (iii) 768, 524
4. The sum of HCF and LCM of two numbers is 1260. If their LCM is 900 more than their HCF, find the product of two numbers.
5. Using Euclid's Division lemma, show that the cube of any positive integer is of the form $9m$, $9m + 1$ or $9m + 8$.
6. Show that the cube of any positive integer is of the form $4m$, $4m + 1$ or $4m + 3$, where m is any integer.

SECTION-B

Objective Type Questions :

1. $(58)^n$ can end with all of the following except
   (1) 4 (2) 6
   (3) 3 (4) 2
2. HCF of 306 and 657 is 9, then their LCM is
   (1) 22338 (2) 11169
   (3) 7446 (4) None of these
3. HCF of the integers 3528, 2100, 792
   (1) 16 (2) 12
   (3) 36 (4) 24

4. LCM of the integers 2205, 2520, 8100 is

(1) 753800 (2) 396900
(3) 1190700 (4) 793800

5. Which of the following numbers are irrational?

(i) $\sqrt{2}$ (ii) $\sqrt[3]{125}$
(iii) $\sqrt{36}$ (iv) $\sqrt[3]{8}$
(v) $\sqrt[3]{25}$

(1) Only (i), (iv) & (v) (2) Both (i) & (v)
(3) Only (ii), (iii) & (iv) (4) All of these

6. Which of the following rational numbers will have a terminating decimal expansion?

(i) $\frac{14}{216}$ (ii) $\frac{29}{147}$
(iii) $\frac{12}{400}$ (iv) $\frac{13}{1600}$

(1) Only (iii) (2) Both (iii) & (iv)
(3) (i), (iii) & (iv) (4) All of these

7. If n is a natural number, then $6^n - 5^n$ always ends with digit

(1) 1 (2) 3
(3) 5 (4) 7

8. A terminating decimal when expressed in fractional form always have denominator in the form

(Here, m and n are non-negative integers)

(1) $2^m \cdot 3^n$ (2) $3^m \cdot 5^n$
(3) $5^n \cdot 7^m$ (4) $2^m \cdot 5^n$

9. The HCF of two numbers is 23 and their LCM is 1449. If one of the numbers is 161, then other number is

(1) 207 (2) 414
(3) 107 (4) 205

10. A circular field has circumference of 360 km. Two cyclist Peter and John start together and can cycle at speeds of 12 km/h and 15 km/h, respectively, round the circular field. The time taken by them to meet again at the starting point is

(1) 180 hrs (2) 120 hrs
(3) 150 hrs (4) 130 hrs

11. The sum of two numbers is 629 and their HCF is 37. The number of pairs satisfying the above condition is

(1) 5 (2) 6
(3) 10 (4) 8

12. Between 1 and 3, how many rational numbers exists?

(1) 1 (2) 2
(3) 0 (4) Infinitely many

13. Which of the following is correct?

(1) Perfect square numbers have odd number of factors
(2) LCM of two numbers is always greater than the larger of them
(3) HCF is not a factor of LCM
(4) Each composite number has atmost two factors

14. The real number $\frac{2^2 \times 3^2 \times 7^2}{2^5 \times 5^3 \times 3^2 \times 7}$ will have a

(1) Terminating decimal expansion
(2) Non-terminating decimal expansion
(3) Non-terminating and non-repeating decimal expansion
(4) Terminating and repeating decimal expansion

15. The value of

$$\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+\frac{1}{\sqrt{4}+\sqrt{5}}+\frac{1}{\sqrt{5}+\sqrt{6}}+\frac{1}{\sqrt{6}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{9}}$$

(1) 0 (2) 1
(3) 2 (4) 4

16. When a number is divided by 6, its remainder is always

(1) Greater than 6
(2) Lies between 6 and 12
(3) Greater or equal to zero but less than 6
(4) Less than zero

17. If P_1, P_2, P_3, ..., P_n are distinct odd prime numbers, then $(P_1P_2P_3...P_n) + 1$ is always a
   (1) Composite number
   (2) Perfect square number
   (3) Perfect cube number
   (4) Prime number

18. Consider the statement
   "The product of 2 irrational numbers is always irrational"
   The statement above is
   (1) True
   (2) False
   (3) True only when both irrational numbers are positive
   (4) None of these

19. If p is a prime number and p divides k^2, then p does not divide
   (1) $2k + 1$
   (2) k
   (3) $2k$
   (4) $3k^2$

20. Can 16 and 142 be the HCF and LCM respectively of two numbers?
   (1) Yes
   (2) No
   (3) Yes, only if one the two numbers is a multiple of 16
   (4) With the given data, we cannot find the answer

21. Which of the following statements is correct?
   (1) There can be a real number which is both rational and irrational
   (2) Sum of two irrational number is always irrational
   (3) For any real number x and y, $x < y \Rightarrow x^2 < y^2$
   (4) Every integer is a rational number