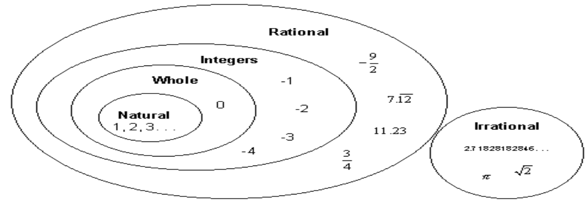
10th – Real Numbers I

Exercise - 1



Q1. Which of the following number is a rational number but not an integer?

(A) —9/3 (B) 28/7 (C) 0/5 (D) 2/5

Q2. Which of the following number is a rational number?

(A) $\frac{2\sqrt{3}}{3}$ (B) $\sqrt{3} - \sqrt{3}$ (C) $\frac{\sqrt{3}}{\sqrt{6}}$ (D) $\frac{1}{\sqrt{2}}$

Q3. Which of the following number is the smallest non-negative rational number?

(A) 0 (B) 1 (C) 0.001 (D) √2

Q4. Which of the following number is the greatest non-positive rational number?

(A) 0 (B) 1 (C) —1 (D) ½

Q5. If 'a' and 'b' are positive integers, which of the following will always be a positive integer?

(A) ab (B) (a – b) (C) a/b (D) (b—a)

Positive / Negative: Integers and zero

Prime Numbers: a number that is divisible only by itself and 1 (e.g. 2, 3, 5, 7, 11).

Composite Numbers: Those numbers those are non – prime are called composite numbers.

Exercise - 2

Direction for questions Q1-9.

State whether the following statements are true or false.

1. If 'p' and 'q' are two +ve integers and p< q, then (p –q) is always a positive integer.
2. All odd numbers are prime numbers.
3. The sum of two prime numbers is always a prime number.
4. Two even numbers can never be co-primes.
5. The sum of two Prime numbers can never be a prime number.
6. The sum of two prime numbers will always be an even number.
7. No even number can be a prime number
8. There are infinitely many prime numbers.
9. Non-negative integers are called natural numbers.

<u>Euclid's Division Lemma</u>: For any two positive integers a and b there exists two unique integers q and r such that a = b q + r where $0 \le r < b$

Apply Euclid's Division Lemma on 28 and 7: 28 = 7 x 4 + 0

Apply Euclid's Division Lemma on 3 and 8: 3 = 8 x 0+3

Apply Euclid's Division Lemma on 95 and 27: 95 = 27 x 3 + 14

<u>Fundamental Theorem of Arithmetic</u>: Every composite number can be expressed as a product of primes and this factorization is unique, apart from the order in which the prime factors occur.

1. HCF: Highest Common Factor
2. LCM: Lowest Common Factor.

Product of any two numbers is equal to the product of their HCF and LCM, but this not true for more than two numbers

Exercise-3

1. Apply Euclid's Division Lemma to the following pairs of positive integers.

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ABHYAS Academy, Behind Pragat Shiv Mandir, Near Govt. College, Nishat Cinema Road, Ambala Cantt.
Ph No. +91-171-2631595, 9416541198, e-Mail: anusethi1968@yahoo.com Website: www. abhyasonline.in

(a) (98,21) (b) (386,27) (c) (12768,245) (d) (3865300,4728)

2. Find the HCF of the following numbers using Euclid's algorithm.

(a) HCF(28,125) (b) HCF(39,150) (c) HCF(42,256) (d) HCF(86,846)

3. A sweet seller has 420 pieces of Kaju Barfi and 130 pieces of Badam Barfi. He wants to stack them in such a way that each stack has the same number of pieces and they take up the least area of the tray. Each stack should have pieces of only one type. What is the number of pieces that can be placed in each stack for this purpose?

4. What is the greatest number that will divide 78 and 84 and leave remainders 3 and 4 respectively?

5. What is the greatest number that will divide 2400 and 1810 and leave the remainders 6 and 4 respectively?

6. What is the greatest number that will divide 38, 45 and 52 and leave the remainders 2, 3 and 4 respectively?

7. Show that 2205 and 4862 are Co - Prime numbers.

8. In a School, there are 391 boys and 323 girls. The Principle wants to have separate sections for boys and girls. He also wants that the strength of all sections should be equal. What should be the maximum number of students in each class?

9. Find the HCF of 265,385 and 750.

Exercise 4

1. The LCM of two numbers is 5499 and their HCF is 6, and one of the numbers is 234. Find the other number.

2. Show that the product of two numbers 60 and 84 is equal to the product of their HCF and LCM.

3. Use Euclid's Division Algorithm to find the HCF of 12156 and 37728.

4. Find the HCF of 4095 and 378 by division algorithm method.

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