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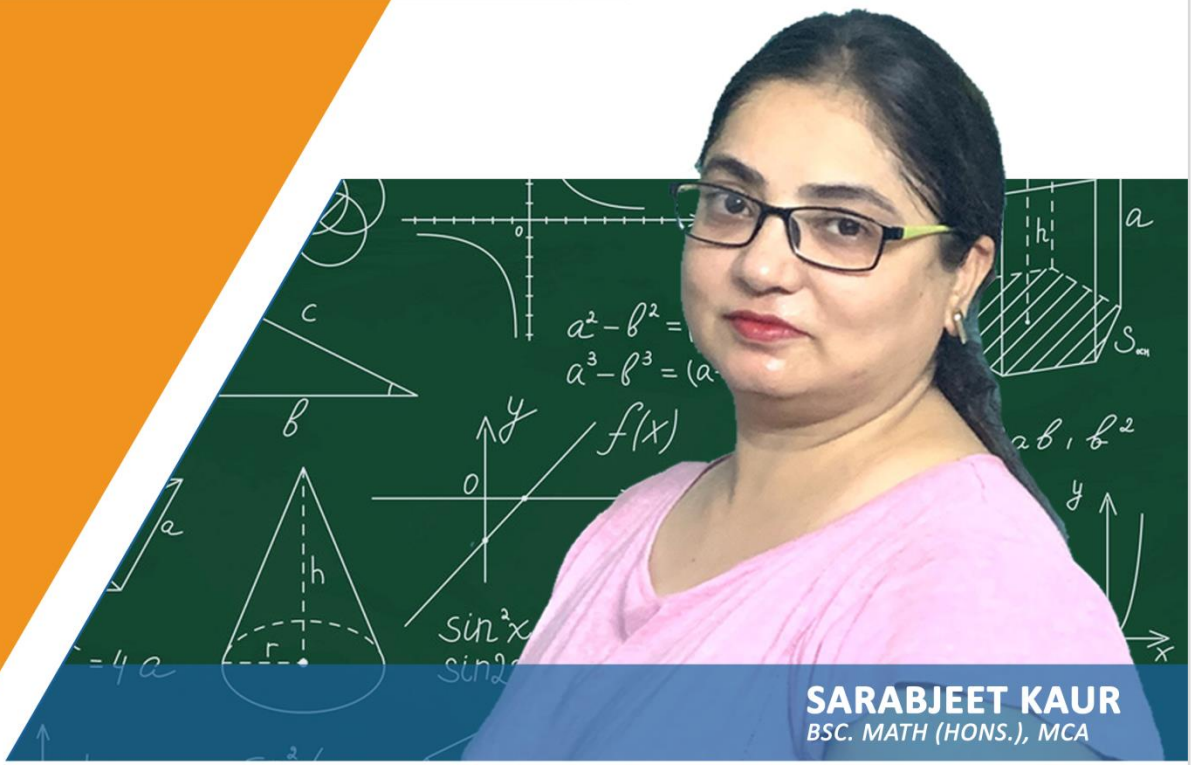

SARABJEET KAUR
BSC. MATH (HONS.), MCA

GRADE 10TH MATHS

CHAPTER 1

REAL NUMBERS

www.careerplusacademy.com careerplusacademy@gmail.com

/careerplusacademy /in/sarabkaur /careerplusacademy +91-987-111-5373

Case study based questions
10th Maths
Real Numbers

Real Numbers

Passage - 1 **5 Marks**

The basis of the Euclidean division algorithm is Euclid's division lemma. To calculate the Highest Common Factor (HCF) of two positive integers a and b we use Euclid's division algorithm. HCF is the largest number which exactly divides two or more positive integers. That means, on dividing both the integers a and b the remainder is zero.

1. What is the Highest Common Factor (HCF) of 4052 and 12576?

a. 4

b. 12

c. 8

d. 16

Q 2. State true or false: HCF (420, 272) = HCF (4052, 420)

(1) TRUE
(2) FALSE

Q 3. State true or false: Euclid's Division Algorithm can be extended for all integers except zero.

(1) TRUE
(2) FALSE

Q 4. State true or false: HCF (c, d) = HCF (d. r) where the symbol HCF (c, d) denotes the HCF of c and d is equal to HCF of d and r.

(1) TRUE
(2) FALSE

Q 5. A proven statement used for proving another statement is called as

(1) Algorithm
(2) Lemma
(3) Postulate
(4) None of the above

Passage – 2 **5 Marks**

Euclid's division lemma/algorithm has several applications related to finding Properties of numbers like every positive even integer is of the form 2q, and every positive odd integer is of the form 2q + 1, where q is some integer.

Q 1. Any positive odd integer can be in which of the following form(s) ?

(1) 2q + 1
(2) 4q + 1
(3) 4q + 3
(4) All of the above

Q 2. Cube of any positive integer can be in which of the following form(s) ?

(1) 9q
(2) 9q + 1
(3) 9q + 8
(4) All of the above

Q 3. Square of any positive integer can be in which of the following form(s) ?

(1) 3q
(2) 3q + 1
(3) Both A and B
(4) 3q + 2

Q 4. Any positive even integer can be in which of the following form(s) ?

(1) 4q + 2
(2) 4q + 1
(3) 4q + 3
(4) None of the above

Q 5. Using Euclid's division algorithm what is H.C.F of 420 and 130 ?

(1) 5
(2) 10
(3) 15
(4) 20

Passage - 3 **5 Marks**

A sweetseller has 420 kaju barfis and 130 badam barfis. He wants to stack them in such a way that each stack has the same number, and they take up the least area of the tray. He takes help of his friend for this who tolds that he can make stacks of 10 for both kinds of barfi.

Q 1. Sweetseller friend might have used which of the method(s) to solve the given problem?

(1) Hit and Trail
(2) Highest Common Factor
(3) Both A and B
(4) Least Common Multiple.

Q 2. Which of the following is the most optimal method to solve the given problem?

(1) Hit and Trail
(2) Highest Common Factor
(3) Least Common Multiple.
(4) None of the above

Q 3. If sweetseller has 272 kaju barfis and 148 badam barfis, what is the stack size given that each stack has the same number, and they take up the least area of the tray?

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

Q 4. State true or false: Euclid's division algorithm is a technique to compute the Highest Common Factor (HCF) of two given positive integers.

(1) TRUE
(2) FALSE

Q 5. State true or false: HCF of two positive integers a and b is the largest positive integer d that divides both a and b.

(1) TRUE
(2) FALSE

According to Fundamental Theorem of Arithmetic, Every composite number can be expressed (factorised) as a product of primes, and this factorisation is unique, apart from the order in which the prime factors occur.

Q 1. State true or false: The prime factorisation of a natural number is unique, except for the order of its factors.

(1) TRUE
(2) FALSE

Q 2. Is
$6 \times 5 \times 4 \times 3 \times 2 \times 1$
a composite number?

(1) YES
(2) NO

Q 3. How is 156 expressed as a product of its prime factors.

(1) $2 \times 3 \times 3 \times 13$
(2) $2 \times 2 \times 5 \times 13$
(3) $2 \times 2 \times 3 \times 13$
(4) $2 \times 5 \times 3 \times 13$

Q 4. Highest Common Factor (H.C.F) of two numbers can be found out by using which of the following method(s)?

(1) Prime Factorisation
(2) Euclid'd division algorithm
(3) Both A and B
(4) Hit and trial.

Q 5. What is Least Common Multiple (L.C.M) of 96 and 404 ?

(1) 9696
(2) 9600
(3) 9500
(4) None of the above