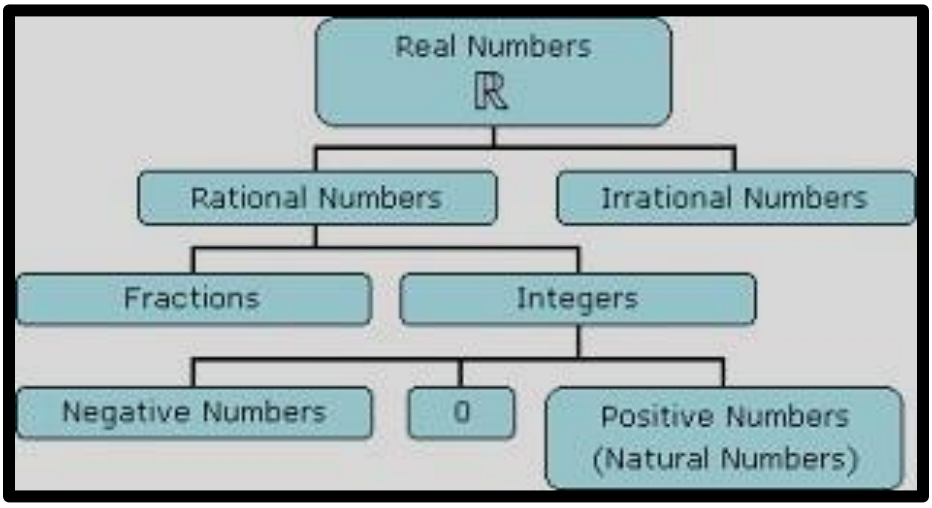
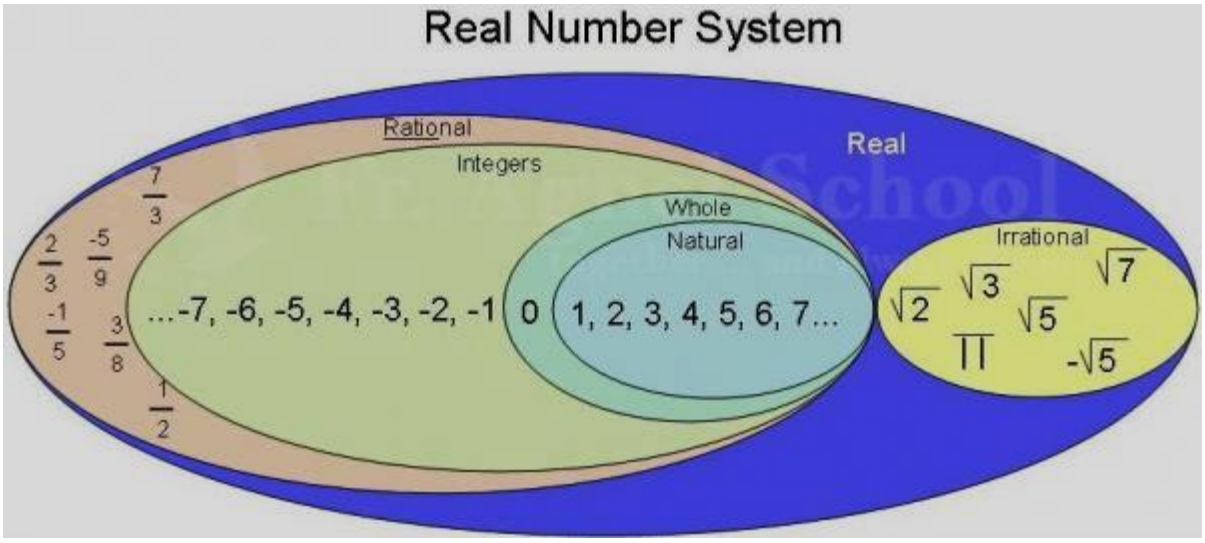
REAL NUMBERS
Chapter-1
SYNOPSIS





EUCLID'S DIVISION LEMMA

Given positive integers a and b , there exists unique integers q , r such that $a = bq + r$ where $0 \leq r \leq b$

FUNDAMENTAL THEOREM OF ARITHMETIC

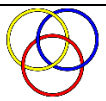
Every Composite number can be expressed as a product of primes, and this factorisation is unique, apart from the order in which the prime factors

appear

Let $x = \frac{p}{q}$ be a rational number, such that the prime factorisation of q is in the form $2^n 5^m$, where n,m are non negative integers . Then x has a decimal representation which terminates.

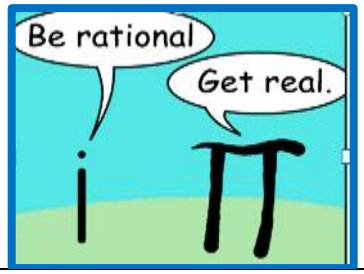
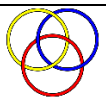
- Let $x = \frac{p}{q}$ be a rational number, such that the prime factorisation of q is **not** in the form $2^n 5^m$, where n,m are non negative integers . Then x has a decimal representation which is nonterminating recurring .

A.		MCQ (1 Mark)	Level
1		HCF of two numbers is 113,their LCM is 56952 .If one number is 904,the other number is a)7719 b)7119 c)7791 d)7911	C
2		Euclid's division algorithm can be applied to a)only positive integers b) only negative integers c)all integers d) all of these	C
3		LCM X HCF of two numbers = a) First no. X Second no. b) First no/second no c) first no+ second No. d) none of these	U
4		$2.15\overline{3}$ is a) An integer b) an irrational no. c) rational no. d) all of these	U
5		5.151239718…… is a) A rational number b) a non-terminating decimal c) an irrational number d) both (b) and (c)	
6		The decimal expansion of 35/50 is--- a)0.07 b) 0.35 c) 0.70 d) 0.5	C
7		5x7x11x13+13 is a : A) Composite number b)whole number c)Prime number d)zero	U
8		For what least value of n, $(24)^n$ is divisible by 8? a)0 b)-1 c)1 d)2	U
9		Sum of two rational is always a) Irrational b)rational c)fraction d)whole number	HOT
10		$5\sqrt{7}$ is a) Irrational b) rational c) fraction d) all of the above	C

11		$5.7\overline{8}$ is a) A terminating decimal number b) a rational number b) c)an irrational number d) both (a) and (b)	C
12		4.131131113……is a) a rational number b) an irrational number c) a natural number d)both (a) and (b)	HOT
13		The decimal representation of $\frac{3}{24}$ will be a) terminating b) non-terminating] b) non-terminating repeating d)both (a) and (b)	MD
14		If the HCF of two numbers is 1, the two numbers are called a) composite b)co-prime c)perfect d) irrational	U
15		If $\frac{p}{q}$ Is a rational number ($q \neq 0$) then the condition on q , so that decimal representation of $\frac{p}{q}$ is terminating is a) $q=2^n.5^m$ (m& n are non-negative integers) b)$p=2^n.5^m$ c)$q=3^n.5^m$ d)$q=2^n.7^m$	U
		SHORT ANSWER TYPE	
		1) Write the general form of an odd positive integer. 2) Give an example of two irrational numbers whose sum is rational. 3) If LCM(12,28) = 84 ,find their HCF. 4) State Fundamental Theorem of Arithmetic. 5) State Euclid's Division Lemma.	

		6) Why 13/120 is non terminating decimal number. 7) Write the HCF of the smallest composite number and the smallest prime number. 8) Find the HCF of 960 and 432. 9) Why 9^ncan't end with the digit 0. 10) How many irrational numbers lie between $\sqrt{2}$ and $\sqrt{3}$.write any one.	

A.		**Very Short Answer Questions (VSA) (1 Mark)**	**Level**
1		If the HCF (72,120) = 24. Find the LCM (72,120)	C
2		The decimal expansion of the rational number $\frac{33}{2^2 \times 5}$ will terminate after how many decimal places.	C
3		If 2 positive integers a and b are written as a = $x^3y^2$and b= xy^3then find the HCF (a, b).	U
4		If 2 positive integers p and q can be written as p = $ab^2$and q = a^3b, then find the LCM (p, q)	U
B.		**Short Answer Questions (SA) (2 marks)**	
5		State Fundamental Theorem of Arithmetic. Check whether 15^n can end with the digit 0 for any natural number 'n'.	C
6		Find the least number that is divisible by all the numbers between 1 and 10 (both inclusive)	U
7		On a morning walk, 3 persons step off together and their steps measure 40 cm, 42cm and 45cm respectively. What is the minimum distance each should walk, so that each can cover the same distance in complete steps	U

8		If x and y are both odd positive inegers, then prove that $x^2+ y^2$ is even.	HOT
C.		**Long Answer Questions (LA) (3 Marks)**	
9		Prove that $\sqrt{11}$ is  irrational.	C
10		Prove that $6+2\sqrt{3}$ is irrational	C
11		Write the denominator of the rational number $\frac{257}{5000}$ in the form $2^m \times 5^n$, where m and n are non-negative integers. Hence write its decimal expansion without actual division.	HOT
12		Prove that $n^2 - n$ is divisible by 2 for every positive integer n.	MD
D.		**V Long Answer Questions (VLA) (4 Marks)**	
13		Find the greatest number that will divide 445,572,699 leaving the reminders 4,5 and 6 respectively	U
14		Find the smallest number which leaves remainders 8 and 12 when divided by 28 and 32 respectively.	U
15		Find the HCF of 65 and 117 and express it in the form 65m + 117n.	U

16		 Using Euclid's algorithm , find the HCF of 441 , 567 and 693	U
17	!?	Prove that one and only one out of n, (n + 2) and (n+ 4) is divisible by 3, where n is any positive integer.	HOT

REAL NUMBERS

Answers

Answers (mcq)

1. B 2. A 3. C 4.C 5. D 6. C
1. A 8. C 9. B 10. A 11. B 12. B
A 14. B 15. A

Answers (short answer type)

1)2q+1 2)5+√3 and 5-√3 3)HCF = 4 4)….. 5)……. 6)3 is a factor of 120 7)HCF =2 8)48

9)5 is not a factor of 9 10)infinite

SECTION A

1. 360
2. 2 decimal places
3. xy^2
4. a^3b^2

SECTION B

6) 2520 7) 2520

SECTION C

11) 0.0514

SECTION D

13) 63 14) 204 15) HCF =13 16) 63

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