Ravi Maths Tuition

Real Numbers

10th Standard

Maths

Multiple Choice Question 94 x 1 = 94

1) If x and y are odd positive integers then $x^2 + y^2$ is-

(a) even (b) odd or even (c) multiple of 2 and 4 (d) odd

2) What is the HCF of 161 and 303?

(a) 1 (b) 11 (c) 13 (d) 3

3) H.C.F. of two consecutive even numbers is:

(a) 1 (b) 4 (c) 2 (d) 0

4) 6^n is divisible by

(a) 2 (b) 3 (c) 5 (d) 2 and 3 both

5) For some integer ‘m’ every odd integer is of form

(a) 2m + 1 (b) m + 1 (c) 2 m (d) m

6) Write the HCF of the smallest composite number and the smallest even number

(a) 4 (b) 1 (c) 2 (d) 0

7) The largest number that divides 460 and 50 leaving remainder 5 in the first case and 8 in the second case is

(a) 12 (b) 2 (c) 17 (d) 7

8) HCF of the smallest composite number and the smallest prime number is

(a) 0 (b) 4 (c) 2 (d) 1

9) If n is a positive integer , then $n^2 - n$ is always

(a) multiple of 2 and 4 (b) odd or even (c) odd (d) even

10) If the HCF of 85 and 153 is expressible in the form 85n – 153, then value of n is :

(a) 4 (b) 2 (c) 3 (d) 1

11) H.C.F. of two consecutive even numbers is:

(a) 2 (b) 1 (c) 0 (d) 4

12) What is the HCF of 235 and 395?

(a) 25 (b) 35 (c) 5 (d) 13

13) What is the HCF of 1076 and 584

(a) 16 (b) 4 (c) 12 (d) 24

14) The HCF of 135 and 165 is …

(a) 25 (b) 5 (c) 15 (d) 35

15) H. C. F. of 96 and 404 is

(a) 4696 (b) 4 (c) 96 (d) 8

16) From among a minimum of how many integers can you say that one is divisible by 3?

(a) 1 (b) 4 (c) 3 (d) 5

17) There are 135 partcipants in English and 165 in Mathematics in a seminar. What is the minimum number of rooms required to seat them if each room must have the same number of participants from each of the two subjects.

(a) 25 (b) 30 (c) 15 (d) 20

18) Euclid's division lemma states that if a and b are two positive integers, then there exist unique integers q and r such that:

(a) $a = bq + r, 0 < r < b$ (b) $a = bq + r, 0 \le r \le b$ (c) $a = bq + r, 0 \le r < b$ (d) $a = bq + r, 0 < b \le r$

19) If the H. C. F of 210 and 55 is expressible in the form $210\times5 + 55y$ then value of y is

(a) 0 (b) 5 (c) -20 (d) -19

20) For any two positive integers a and b, there exist unique integers q and r such that $a = bq + r, 0 \le r < b$, if $b = 4$ then which is not the value of r?

(a) 3 (b) 2 (c) 4 (d) 1

21) 'a' and 'b' are two prime numbers . What is their HCF

(a) 1 (b) ab (c) a (d) b

22) Which of the following is a non-terminating repeating decimal?

(a) 14/35 (b) 1/7 (c) 7/8 (d) 35/14

23) If p is a positive prime integer . Then $\sqrt{P}$_

(a) Is rational (b) Is irrational (c) may not exist (d) may be rational or irrational

24) A number of the form 4^n cannot be divisible by

(a) 10 (b) 4 (c) 2 (d) All the above

25) A number of the form 4n cannot be divisible byGiven that the LCM of 306 and 657 is 22338, what is the LCM of 102, 306 and 657

(a) 1 (b) 22338 (c) 22338 x 102 (d) None of these

26) Which of the following rational number has non-terminating and repeating decimal expansion?

(a) 23/8 (b) 17/6 (c) 15/1600 (d) 35/50

27) The H.C.F.of 145 and 220 is

(a) 11 (b) 15 (c) 10 (d) 5

28) The reciprocal of an irrational number is

(a) An integer (b) Rational (c) Irrational (d) None of these

29) The decimal representation of 83/100 will be:

(a) Non terminating (b) Non terminating repeating (c) Terminating
(d) Non terminating non repeating

30) A school has three sections of Class 10. They need to have enough books in the class library so that they can be distributed equally in the three sections . What is the minimum number of books required if the number of students in section A , B and C are 30, 32 and 36 respectively?

(a) 36 (b) 30 (c) 288 (d) 1440

31) The number 7 x 11 x 13 + 13 is :

(a) prime number (b) negative integer (c) irrational number (d) composite number

32) Which of the following rational numbers has a denominator that can be expressed as a product of powers of 2 and 5?

(a) 0.143245 (b) 0.141414 (c) 1.34573457 (d) 0.23452345

33) If x = 2^3 x 5^2 , y = 2^2 x 3^2 then HCF (x, y) is :

(a) 36 (b) 12 (c) 6 (d) 18

34) A rational number can be expressed as a terminating decimal if its denominator has factors

(a) 2, 3 and 5 (b) 3 and 5 (c) 2 and 3 (d) 2 and 5

35) Given that the H.C.F. of 35 and 49 is 7, what is their LCM?

(a) 265 (b) 245 (c) 195 (d) 225

36) The LCM of two numbers x and y is z. What is their HCF?

(a) yz/x (b) xy/z (c) xz/y (d) xyz

37) For some integer m every odd integer is of the form

(a) 2m (b) -2m (c) 2m + 1 (d) m

38) There is a circular path around a sport field. Sonia takes 18min to drive one around of the field, while Ravi takes 12min for the same. Suppose they both start at the same point at the same time, and go in the same direction, after how minutes will they meet again at the starting point?

(a) 3 (b) 36 (c) 6 (d) 18

39) The number 1 is ___________ number

(a) Prime (b) neither Prime nor composite (c) Prime and composite (d) Composite

40) The prime factorization of 184 is

(a) $2^3 \times 3 \times. 23$ (b) 8×23 (c) $2^3 \times 23$ (d) $46 \times. 4$

41) 23 x 3 x 23 Any rational number x in the form p/q (where p and q are co primes), whose decimal expression terminates. Which of the following represents the correct form of prime factorisation of q?

(a) 2n, where n is a whole number (b) $2^m \times 5^n$, where m and n are the whole numbers (c) 1

(d) 5n, where n is a whole number

42) The decimal expansion of 21/24 will terminate after how many places of decimal?

(a) 2 (b) 3 (c) 1 (d) 4

43) Given that HCF (26 , 91) = 13, then LCM of (26 , 91) is :

(a) 182 (b) 91 (c) 364 (d) 2366

44) If two positive integers A and B can be expressed as A = ab^2 and B = a^3b, where a and b are prime numbers, then LCM (A, B) is

(a) a^3b^2 (b) a^4b^3 (c) a^2b^2 (d) ab

45) Which one of the following is true about the prime factors of the denominator of the decimal expansion: 278.1782?

(a) It is a power of 5 only (b) It is a product of powers of 2 and 5 (c) It may have any factors

(d) It is a power of 2 only

46) Largest number that divides 679 and 599 leaving remainder 4 is

(a) 5 (b) 35 (c) 25 (d) 15

47) Write the decimal expansion : 0.234234234.......as a rational number

(a) 234/9999 (b) can not be expressed as a rational number (c) 234/999 (d) 234/99

48) The L.C.M. of 12,15 and 21 is

(a) 360 (b) 180 (c) 420 (d) 450

49) If x is a positive real number , then there exists an irrational number y such that

(a) $-\infty. < x < y$ (b) $0 < y < x$ (c) $-\infty. < y < x$ (d) $0 < x < y$

50) The largest number which divides 70 and 125 leaving remainders 5 and 8, respectively is

(a) 1750 (b) 15 (c) 63 (d) 13

51) If a prime number p divides a^2 , then which one of the following is true?

(a) p divides a (b) p = a (c) p > a (d) a divides p

52) $119^2 - 111^2$ is:

(a) Composite number (b) An odd composite number (c) Prime number (d) An odd prime number

53) Complete the statement : Any positive odd integer is of the form 6q + 1, or 6q + 3, or __________ , where q is some integer

(a) 6q (b) 6q+4 (c) 6q+2 (d) 6q+5

54) For some integer m,every even integer is of the form

(a) m (b) m + 1 (c) 2m (d) 2m + 1

55) Without actually performing the long division, the terminating decimal expansion $\frac{51}{1500}$.S in the form of $\frac{51}{2^n * 5^{m'}}$then (m + n) is equal to

(a) 2 (b) 3 (c) 5 (d) 8

56) For some integer q, every odd integer is of the form

(a) q (b) q +1 (c) 2q (d) 2q +1

57) If n is an even natural number, then the largest natural number by which n(n + 1)(n + 2) is divisible, is

(a) 6 (b) 8 (c) 12 (d) 24

58) The rational form of $0.2\bar{5}4$ is in the form of $\frac{p}{q}$ then (p + q) is

(a) 14 (b) 55 (c) 65 (d) 79

59) Which of the following rational number have non-terminating repeating decimal expansion?

(a) $\frac{31}{3125}$ (b) $\frac{71}{512}$ (c) $\frac{23}{200}$ (d) None of these

60) If two positive integers a and b are written as 0 = x ^{3}y ^{2} an d b = xy ^{3}, where x, yare prime numbers, then HCF (a, b) is

(a) xy (b) xy^2 (c) x^3y^3 (d) x^2y^2

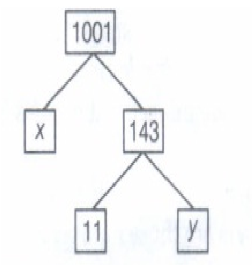
61) If two positive integers p and q can be expressed as p = ab^2 and q = a^3 b;where a, b being prime numbers, then LCM (p, q) is equal to

(a) ab (b) a^2b^2 (c) a^3b^2 (d) a^3b^3

62) The product of a non-zero rational and an irrational number is

(a) always irrational (b) always rational (c) rational or irrational (d) one

63) The values of x and y is the given figure are



(a) 7,13 (b) 13,7 (c) 9,12 (d) 12,9

64) If P = (2)(4)(6)...(20) and Q = (1)(3)(5)...(19),then the HCF of Pand Q is

(a) $3^3 57$ (b) $3^4 5$ (c) $3^4 5^2 7$ (d) $3^2 5^2$

65) If X = 28+ (1x 2 x 3 x 4 x ...xl s x 28)and Y = 17 + (1x 2 x 3 x ... xl7), then which of the following is/are true?

(i) X is a composite number

(ii) Y is a prime number

(iii) X - Y is a prime number

(iv) X + Y is a composite number.

(a) (i) and (iv) (b) (ii) and (iii) (c) (ii) and (iv) (d) (i) and (ii)

66) Two positive numbers have their HCF as 12 and their product as 6336. The number of pairs possible for the numbers, is

(a) 2 (b) 3 (c) 4 (d) 5

67) For any natural number n, 9^n cannot end with the digit.

(a) 1 (b) 2 (c) 9 (d) None of these

68) The value of $(12)^{3x} + (18)^{3x}$,x ϵ N, end with the digit

(a) 2 (b) 8 (c) 0 (d) Cannot be determined

69) A circular field has a circumference of 360 km. TWo cyclists Sumeet and John start together and can cycle at speeds of 12 km!h and 15 km/h respectively, round the circular field. They will meet again at the starting point after

(a) 40 h (b) 30 h (c) 180 h (d) 120 h

70) Three sets of Mathematics, Science and Biology books have to be stacked in such a way that all the books are stored subject wise and the height of each stack is the same.

The number of Mathematics books is 240, the number of Science books is 960 and the number of Biology books is 1024.

The number of stacks of Mathematics, Science and Biology books, assuming that the books are of the same thickness are respectively.

(a) 15, 60, 64 (b) 60, 15, 64 (c) 64, 15,60 (d) None of these

71) If a+ $bp^{1/3}$+ $Cp^{1/3}$ = 0, where a, b, c,p are rational numbers and p is not perfect cube, then

(a) $a \neq b = c$ (b) $a = b \neq c$ (c) $a \neq b \neq c$ (d) $a = b = c$

72) If x andy are odd positive integers, then $X^2 + y^2$ is

(a) even and divisible by 4 (b) even and not divisible by 4 (c) odd and divisible by 4

(d) odd and not divisible by 4

73) The remainder on dividing given integers a and b by 7 are respectively 5 and 4. Then, the remainder when ab is divided by 7 is

(a) 5 (b) 4 (c) 0 (d) 6

74) The smallest irrational number by which √20 should be multiplied, so as to get a rational number, Is _____.

(a) √20 (b) √2 (c) 5 (d) √5

75) The prime factorization of the number 2304 is

(a) $2^8 \times 3^2$ (b) $2^7 \times 3^3$ (c) $2^8 \times 3^1$ (d) $2^7 \times 3^2$

76) n is a natural number such that n > 1 Which of these can definitely be expressed as a product of primes?

(i) √n (ii) n (iii) √n/2

(a) only (ii) (b) only (i) and (ii) (c) all (i), (ii) and (iii) (d) cannot be determined without knowing n

77) If n is a natural number, then $2(5^n + 6^n)$ always ends with

(a) 0 (b) 2 (c) 4 (d) 6

78) If n is a natural number, then 8^n cannot end with digit with

(a) 0 (b) 2 (c) 4 (d) 6

79) A pair of irrational numbers whose product is a rational number is

(a) $(\sqrt{16}, \sqrt{4})$ (b) $(\sqrt{5}, \sqrt{2})$ (c) $(\sqrt{3}, \sqrt{27})$ (d) $(\sqrt{36}, \sqrt{2})$

80) HCF of (3^4 x 2^2 x 7^3) and (3^2 x 5 x 7) is

(a) 630 (b) 63 (c) 729 (d) 567

81) HCF of 92 and 152 is

(a) 4 (b) 19 (c) 23 (d) 57

82) If a and b are two coprime numbers, then a^3 and b^3 are

(a) coprime (b) not coprime (c) even (d) odd

83) The LCM of smallest two-digit number and smallest composite number is

(a) 12 (b) 4 (c) 20 (d) 40

84) If $a = 2^2 \times 3^x, b = 2^2 \times 3 \times 5, c = 2^2 \times 3 \times 7$ and LCM (a, b, c) = 3780, then x is equal to

(a) 1 (b) 2 (c) 3 (d) 0

85) HCF of two consecutive even numbers is

(a) 0 (b) 1 (c) 2 (d) 4

86) The HCF of kand 93 is 31, where kis a natural number. Which of these can be true for some values of k?
(i) k is a multiple of 31.
(ii) k is a multiple of 93.
(iii) k is an even number.
(iv) k is an odd number.

(a) only (ii) and (iii) (b) only (i), (ii) and (iii) (c) only (i) (iii) and (iv) (d) all (i), (ii), (iii) and (iv)

87) Three alarm clocks ring their alarms at regular Competency Based Question intervals of 20 min, 25 min and 30 min, respectively. If they first beep together at 12 noon, at what time will they beep again for the first time?

(a) 4:00 pm (b) 4:30 pm (c) 5:00 pm (d) 5:30 pm

88) The LCM of two numbers is 2400. Which of the following cannot be their HCF?

(a) 300 (b) 400 (c) 500 (d) 600

89) If two positive integers a and b are written as a = x^3y^2 and b= xy^3,where x, y are prime numbers, then the result obtained by dividing the product of the positive integers by the LCM (a, b) is

(a) xy (b) xy^2 (c) x^3y^3 (d) x^2y^2

90) The (HCF x LCM) for the numbers 50 and 20 is

(a) 1000 (b) 50 (c) 100 (d) 500

91) If HCF (72, 120)=24, then LCM (72, 120) is

(a) 72 (b) 120 (c) 360 (d) 9640

92) Given HCF (2520, 6600) = 40 and LCM (2520, 6600) = 252 x k, then the value of k is

(a) 1650 (b) 1600 (c) 165 (d) 1625

93) HCF of two numbers is 27 and their LCM is 162 of the number is 54, then the other number is

(a) 36 (b) 35 (c) 9 (d) 81

94) What should be added from the polynomial x^2 - 5x + 4, so that 3 is the zero of the resulting polynomial?

(a) 1 (b) 2 (c) 4 (d) 5

True or False 6 x 1 = 6

95) Given positive integers a and b, there exit whole numbers q and r satisfying a = bq + r, 0 < r < b.

(a) True (b) False

96) The smallest prime number is 3.

(a) True (b) False

97) The sum of rational and irrational number is irrational number.

(a) True (b) False

98) Irrational number is non-terminating repeating decimal

(a) True (b) False

99) Cube of any positive integer can be form of 9m, 9m+1 or 9m+8.

(a) True (b) False

100) If sum of two numbers is 1215 and their HCF is 81, then there are total 7 such pairs.

(a) True (b) False

Match the following 4 x 1 = 4

101)	The LCM of smallest p. 4 composite number and smallest two digitcomposite number is	(1) 20
102)	945 is expressed as a q. 20 product of primefactor is 3^a x 5^b x 7^c , then a + b +c is equal to	(2) 5
103)	The number of decimal places afterwhichthe decimal expansion of the rationalnumber $\frac{37}{2^3 \times 5}$ terminate is	(3) 22
104)	Ifthe HCF of 657 and 963 is expressible inthe formof 657m+ 963(-15), then m is	(4) 3

Assertion and reason 5 x 1 = 5

105) **Assertion** The product of $(3 + \sqrt{5})$ and (3 - $\sqrt{5}$) is a rational number.

Reason The product of two irrational number is always rational number.

codes:

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct.

106) **Assertion** The rational number $\frac{129}{2^2 \times 5^7 \times 7^2}$ is non-terminating repeating decimals.

Reason Let x be a rational number whose decimal expansion terminates. Then, x can expressed in the form of $\frac{p}{q}$ where p and q are coprime and the prime factorisation of q is of the form 2^m x 5^n, where m and n are non-negative integers.

codes:

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but reason is correct.

107) **Assertion (A)** $\sqrt{2}(5 - \sqrt{2})$ is an irrational number.

Reason (R) Product of two irrational number is always irrational.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A)is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

108) Assertion : The number 5^n cannot end with the digit 0. where n is a natural number.
Reason : Prime factorisation of 5 has only two factors 1 and 5.
(a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.
(b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.
(c) Assertion is correct but Reason is incorrect.
(d) Assertion is incorrect but Reason is correct.

109) Assertion : The HCF of two numbers is 5 and their product is 150. Then, their LCM is 40.
Reason : For any two positive integers a and b. HCF (a, b) x LCM (a, b) = a x b
(a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.
(b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.
(c) Assertion is correct but Reason is incorrect.
(d) Assertion is incorrect but Reason is correct.

2 Marks 158 x 2 = 316

110) Consider the numbers 4^n , where n is a natural number. Check whether there is any value of n for which 4^n ends with the digit zero.

111) Find the HCF of 96 and 404 by the prime factorisation method. Hence, find their LCM.

112) Given that HCF (306, 657) = 9, find LCM (306, 657).

113) Find the LCM and HCF of the following integers by applying the prime factorisation method.
17, 23 and 29

114) Find the LCM and HCF of the following integers by applying the prime factorisation method.
8, 9 and 25.

115) Find the LCM and HCF of the following pairs of integers and verify that LCM x HCF = Product of the two numbers.
510 and 92

116) Find the LCM and HCF of the following pairs of integers and verify that LCM x HCF = Product of the two numbers.
336 and 54

117) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{13}{3125}$

118) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{13}{3125}$

119) Find the largest number which divides 70 and 125 leaving remainders 5 and 8. respectively.

120) Express $0.5\overline{4}$ recurring decimals as fraction in their lowest term.

121) In Euclid's division lemma, the value of r, when a positive integer a is divided by 3, are 0 and 1 only. Is this statement true or false? Justify your answer.

122) On GT road, three consecutive traffic lights change after 36, 42 and 72 s. If the lights are first switched on at 9.00 am, then at what time will they change simultaneously?

123) For what value of n, 2^n x 5^n ends with 5?

124) Can the number 6^n , where n being a natural number, ends with digit 5? Give reason.

125) Write the HCF and LCM of the smallest odd composite number and the smallest odd prime number. If an odd number p divides q^2, then will it divide q^3 also? Explain.

126) A rational number in its decimal expansion is 327.7081. What can you say about the prime factors of q. when this number is expressed in the form $\frac{p}{q}$? Give reason.

127) If n is an odd integer, then show that n^2 - 1 is divisible by 8.

128) A forester wants to plant 66 mango trees, 88 orange trees and 110 apple trees in equal rows (in terms of number of trees). Also, he wants to make distinct rows of trees (i.e. only one type of trees in one row). Find the number of minimum rows.

129) A number when divided by 61 gives 27 as quotient and 32 as remainder. Find the number.

130) If d = HCF (48, 72), find the value of d.

131) If p/q is a rational number $(q \neq 0)$, then what is the condition of q, so that the decimal representation of p/q is non-terminating repeated?

132) If $(m)^n$ = 64, where m and n are positive integers, find the value of $(n)^{mn}$.

133) Find the greatest number which exactly divides 280 and 1245, leaving remainders 4 and 3, respectively.

134) Find the LCM of x and y, if xy = 180 and HCF of (x, y) = 5

135) Find (HCF x LCM) for the numbers 100 and 190.

136) Check whether 15^n can end with digit zero for any natural number n.

137) Write whether $\left(\frac{2\sqrt{45}+3\sqrt{20}}{2\sqrt{5}}\right)$ on simplification gives a rational or an irrational number.

138) Write down the following real numbers in the form of p/q.
(i) $0.3\overline{6}$ (ii) $33.\overline{3}$

139) Find the least number that is divisible by all the numbers from 1 to 5 (both inclusive).

140) Find the HCF of 52 and 117 and also find the values of x and y, if it express in the form 52x + 117y.

141) Express number as a product of its prime factor 140

142) Explain why 13233343563715 is a composite number?

143) a and b are two positive integers such that the least prime factor of a is 3 and the least prime factor of b is 5. Then calculate the least prime factor of (a + b).

144) What is the HCF of the smallest composite number and the smallest prime number?

145) Calculate the HCF of 3^3 x 5 and 3^2 x 5^2.

146) If HCF (a, b) = 12 and a x b = 1,800, then find LCM (a, b).

147) Find HCF of the numbers given below: k, u, 3k, 4k and 5k, where k is any positive integer.

148) Find the HCF and LCM of 90 and 144 by the ' method of prime factorization.

149) Using Euclid's algorithm, find the HCF of 240 and 228.

150) Given that HCF (306, 1,314) = 18. Find LCM (306, 1,314).

151) Complete the following factor tree and find the composite number x.

152) Complete the following factor tree and find the composite number x :

153) Find the missing numbers a, b, c and d in the given factor tree

154) Complete the following factor tree and find the composite number x :

155) Explain whether $3 \times 12 \times 101 + 4$ is a prime number or a composite number

156) Explain whether (7 x 13 x 11) + 11and (7 x 6 x 5 x 4 x 3 x 2 x 1) + 3 are composite numbers.

157) Find the HCF of 1,656 and 4,025 by Euclid's division algorithm.

158) 12.Find the smallest natural number by which 1,200 should be multiplied so that the square root of the product is a rational number

159) Show that any positive even integer can be written in the from 6q, 6q + 2 or 6q + 4, where q is an integer

160) Can two numbers have 15 as their HCF and 175 as their LCM ? Give reasons.

161) Show that 7^n cannot end with the digit zero, for any natural number II.

162) Check whether $(15)^n$ can end with digit 0 for any $n \varepsilon N$

163) The length, breadth and height of a room are 8m 50 cm, 6 m 25 cm and 4 m 75 cm respectively. Find the length of the longest rod that can measure the dimensions of the room exactly.

164) What is the condition for the decimal expansion of a rational number to terminate? Explain with the help of an example.

165) Find the smallest positive rational number by which 1/7 should be multiplied so that its decimal expansion terminates after 2 places of decimal.

166) What type of decimal expansion does a rational number has? How can you distinguish it from decimal expansion of irrational numbers?

167) Calculate $\frac{3}{8}$ in the decimal form.

168) The decimal representation of $\frac{6}{1250}$ will terminate 1250 after how many places of decimal?

169) Show that $5\sqrt{6}$ is an irrational number.

170) Write the denominator of the rational number $\frac{257}{500}$ in the from 2^m x 5^n , where m and n are non-negative integers. Hence write its decimal expansion without actual division.

171) Show that 571 is a prime number.

172) Find the least number that is divisible by all numbers between 1 and 10 (both inclusive).

173) An army contingent of 104 members is to march behind an army band of 96 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?

174) If a and b are two positive integers such that a = bq + r. Where q and r are unique integers. If a < b, then find the value of q.

175) Express the HCF of 234 and 111 as 234x + 111y, where x and y are integers

176) By using Euclid's algorithm find the largest number which divides 650 and 1170.

177) Given that LCM (77, 99) = 693, find the HCF (77, 99).

178) can we have any n $\in$N, where, 4^n ends with the zero digit?

179) The LCM of two numbers is 14 times their HCF The sum of LCM and HCF is 600. If one number is 280, then find the other number

180) Find the largest number that divides 2053 and 967 and leaves a remainder of 5 and 7 respectively

181) If X is the HCF of 65 and 117, find m and n Satistying x = 65m +117n.

182) Show that 21^n cannot end with the digits 0,2,4,6 and 8 for any natural number n.

183) If HCF of 144 and 180 is expressed in the form 13m - 3, find the value of m.

184) Determine the values of p and q so that the prime factorisation of 2520 is expressible as 2^3 x 3^p x q x 7.

185) Without actually performing the long division, state whether the following rational numbers will have terminating decimal expansion or non-terminating repeating decimal expansion.
(i) $\frac{459}{500}$
(ii) $\frac{219}{750}$

186) Find HCF of 426 and 576

187) An army contingent of 1000 members is to march behind an army band of 56 members in a parade.

188) If $\frac{278}{2^3 m}$ has a terminating decimal expression and m is a positive integer such that 2 < m < 9, then find the value of m.

189) Without actually performing to the long division, find if $\frac{987}{10500}$ will have terminating or non-terminating (repeating) decimal expansion. give reasons for your answer.

190) An............. is a series of well defined steps, which gives a procedure for solving a type of problem

191) The sum of even and odd natural number is .... natural number.

192) $\frac{97}{2^3 \times 5^2}$ is _____ decimal

193) 3 +$\sqrt{5}$ is a/an ___________number.

194) Let P be a prime number, if p divides.............. then p divides a,where 0is a positive integer

195) What is the HCF of smallest prime number and the smallest composite number?

196) By what number should 1365 be divided to get 31 as quotient and 32 as remainder?

197) The product of three consecutive positive integers is divisible by 6. Is this statement true or false? Justify your answer.

198) If the HCF of 65 and 117 is expressible in the form 65 m - 117, then find the value of m.

199) In"Euclid's division lemma, the value of r, when a positive integer a is divided by 3, are 0 and 1 only. Is this statement true or false? Justify your answer.

200) Given that $\sqrt{2}$is irrational, prove that (5+3$\sqrt{2}$)is an irrational number.

201) The ratio of two numbers is 15 : 11 and their HCF is 13. Find the numbers.

202) The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form, $\frac{p}{q}$ what can you say about the prime factors of q?
43.123456789

203) Let x = $\frac{p}{q}$, where p and q are coprimes, be a rational number, such that the prime factorisation of q is not of the form 2^n5^m , where n, m are non-negative integers. Then, x has a decimal expansion which is non-terminating repeating (recurring).

204) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{17}{8}$

205) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{64}{455}$

206) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{15}{1600}$

207) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{29}{343}$

208) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{23}{2^3 5^2}$

209) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{129}{2^2 5^7 7^5}$

210) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{35}{50}$

211) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{77}{210}$

212) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{17}{8}$

213) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{64}{455}$

214) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{15}{1600}$

215) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{29}{343}$

216) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{23}{2^3 5^2}$

217) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{129}{2^2 5^7 7^5}$

218) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{6}{15}$

219) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{35}{50}$

220) Write down the decimal expansions of those rational numbers in which have terminating decimal expansions.
$\frac{77}{210}$

221) The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form, $\frac{p}{q}$ what can you say about the prime factors of q?
0.120120012000120000 ...

222) Use Euclid's division algorithm to find the HCF of 196 and 38220

223) Use Euclid's division algorithm to find the HCF of 867 and 255

224) Express number as a product of its prime factor
156

225) Express number as a product of its prime factor
3825

226) Express number as a product of its prime factor
5005

227) Express number as a product of its prime factor 7429

228) Use the Euclid's division algorithm to find the HCF of 612 and 1314

229) Use the Euclid's division algorithm to find the HCF of 650 and 1170

230) Use the Euclid's division algorithm to find the HCF of 870 and 225

231) Use the Euclid's division algorithm to find the HCF of 8840 and 23120

232) Use the Euclid's division algorithm to find the HCF of 4052 and 12576

233) Two tanks contain 504 Land 735 L of milk, respectively. Find the-maximum capacity of a container which can measure the milk of either tank in exact number of times.

234) By using Euclid's division algorithm, find the largest number which when divides 2011 and 2623 gives the remainder 9 and 5, respectively.

235) If d is the HCF of 56 and 72, find x, y satisfying d = 56 x + 72y .

236) If the HCF of 210 and 55 is expressible in the form of210 x 5 + 55m, then find m.

237) Use Euclid's division algorithm to find the HCF of the following three numbers
2, 7 and 12

238) Use Euclid's division algorithm to find the HCF of the following three numbers
441, 567 and 693

239) Use Euclid's division algorithm to find the HCF of the following three numbers
1620,1725 and 255

240) Use Euclid's division algorithm to find the HCF of the following three numbers
4407,2938 and 1469

241) Use Euclid's division algorithm to find the HCF of the following three numbers
625,3125 and 15625

242) Factorise the following numbers through the factor tree.
420

243) Factorise the following numbers through the factor tree.
468

244) Factorise the following numbers through the factor tree.
308

245) Factorise the following numbers through the factor tree.
528

246) Factorise the following numbers through the factor tree.
9072

247) Factorise the following numbers through the factor tree.
19530

248) Express each of the following integers as a product of its prime factor.
945

249) Express each of the following integers as a product of its prime factor.
204

250) Express each of the following integers as a product of its prime factor.
660

251) Express each of the following integers as a product of its prime factor.
7325

252) Express each of the following integers as a product of its prime factor.
99792

253) Express each of the following integers as a product of its prime factor.
874944

254) Find the LCM and HCF of the following integers by applying the prime factorisation method.
40,36,126

255) Find the LCM and HCF of the following integers by applying the prime factorisation method.
84,90,120

256) Find the LCM and HCF of the following integers by applying the prime factorisation method.
24, 15, 36

257) Check whether 12^n can end with the digit 0 or 5, for any natural number n

258) Find HCF and LCM of 612 and 1314 by prime factorisation method.

259) Without actually performing the long division, state Whether the following rational number will have a terminating decimal expansion or non-terminating recurring decimal expansion.
$\frac{23}{8}$

260) Without actually performing the long division, state Vwhether the following rational number will have a terminating decimal expansion or non-terminating recurring decimal expansion.
$\frac{125}{441}$

261) Without actually performing the long division, state Vwhether the following rational number will have a terminating decimal expansion or non-terminating recurring decimal expansion.
$\frac{129}{2^2\times5^2\times7^{17}}$

262) Without actually performing the long division, state Vwhether the following rational number will have a terminating decimal expansion or non-terminating recurring decimal expansion
$.\frac{978}{10500}$

263) Prove that $-7-2\sqrt{3}$ is an irrational number, given that $\sqrt{3}$ is an irrational number.

264) Explain why ($7\times11\times13+2\times11$) is not a prime number.

265) Find the HCF and LCM of 260 and 910 by prime factorisation method.

266) Using prime factorization, find HCF and LCM of 96 and 120

267) The prime factorisation of a prinme number is the number itsetf. How many factors and prime factors does the square of a prime number have?

3 Marks 75 x 3 = 225

268) Check whether 6^n can end with the digit 0 for any natural number n.

269) Prove that $3+2\sqrt{5}$ is irrational.

270) Find the HCF and LCM of 6, 72 and 120 using the prime factorisation method.

271) Find the LCM and HCF of 6 and 20 by the prime factorisation method.

272) Let p be a prime number. If p divides a^2 , then p divides a, where a is a positive integer.

273) Show that $3\sqrt{2}$ is irrational.

274) Prove that the following are irrational :
$\frac{1}{\sqrt{2}}$

275) Prove that the following are irrational :
$7\sqrt{5}$

276) Prove that the following are irrational :
$6+\sqrt{2}$

277) Show that the square of any positive odd integer, is of the form 4m + 1, for some integer m.

278) Find the HCF of 960 and 432.

279) By using Euclid's division algorithm, find the largest number which when divides 969 and 2059, gives the remainders 9 and 11, respectively.

280) Two tankers contain 850 L and 680 L of petrol respectively. Find the maximum capacity of a container which can measure the petrol of either tanker, in exact number of times.

281) There are 156, 208 and 260 students in groups A, B and C respectively. Buses are to be hired to take them for a field trip. Find the minimum number of buses to be hired, if the same number of students should be accommodated in each bus.

282) Explain, why (3 x 5 x 7) + 7 is a composite number?

283) Check whether 4^n , where n is a natural number, can end with the digit 0 for any natural number n.

284) Write the HCF of the smallest composite number and the smallest prime number.

285) Find the LCM and HCF of 120 and 144 by fundamental theorem of arithmetic.

286) The length, breadth and height of a room are 8m 25 cm, 6 m 75 cm, 4 m 50 cm, respectively. Find the length of the longest rod that can measure the three dimensions of the room exactly.

287) If HCF of two numbers is 2 and their product is 120, find their LCM.

288) If the HCF of 35 and 45 is 5, LCM of 35 and 45 is 63 x a, then find the value of a.

289) If HCF (28, 35 and 343) = 7, find the LCM (28, 35 and 343)

290) Show that $3\sqrt{2}$ is an irrational number.

291) Express 23.3408 as decimal expansion in the form of rational number.

292) If $\frac{13}{125}$ is a rational number, find the decimal expansion of it, which terminate.

293) Check whether the rational number $\frac{1}{13}$, is terminating recurring or non-terminating recurring decimal expansion.

294) The numbers 525 and 3000 are both divisible by 3, 5, 15, 25 and 75. What is the HCF of 525 and 3000? Justify your answer.

295) Find the greatest number which on dividing 1657 and 2037 leaves remainders 6 and 5, respectively.

296) State whether $1.2\overline{3} + \frac{3}{4}$ is a rational number or not.

297) If q is prime, then prove that $\sqrt{q}$ is an irrational number.

298) Can two numbers have 18 as their HCF and 380 as their LCM? Give reason.

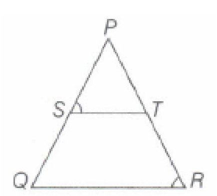
299) Show that the cube of any positive integer is of the form 4m, 4m + 1 or 4m + 3, for some integer m.

300) Show that one and only one out of n, n + 4, n + 8, n + 12 and n + 16 is divisible by 5, where n is any positive integer.

301) Without actually performing the long division, state whether the following rational number will have a terminating decimal expansion or not. Also, write the terminating decimal expansion, if exist.
$\frac{3}{8}$

302) Express 1001 as a product of its prime factor using factor tree.

303) In the adjoining figure, $\frac{PS}{SQ} = \frac{PT}{TR}$ and $\angle PRQ$ Prove that PQR is an isosceles triangle.



304) Show that any positive odd integer is of the form 4q + 1 or 4q + 3, where q is some integer.

305) Fin he HCF of 180, 252 and 324 by Euclid's Division algorithm.

306) Find the greatest number of six digits exactly divisible by 18, 24 and 36

307) Use Euclid division lemma to show that the square of any positive integer cannot be of the form 5m + 2 or 5m + 3 for some integer m.

308) Show that numbers 8^n can never end with digit 0 for any natural number n.

309) Find the HCF, by Euclid's division algorithm of the numbers 92690, 7378 and 7161.

310) 144 cartons r Coke cans and 90 cartons of Pepsi cans are to be stacked in a canteen. If each stack is of the same height and if it eq contain cartons of the same drink, what would be the greatest number of cartons each stacke would have?

311) Three bells toll at intervals of 9, 12, 15 minutes respectively. If they start tolling together, after what time will they next toll together?

312) Find HCF and LCM of 16 and 36 by prime factorization.

313) Find the HCF and LCM of 510 and 92 and verify that HCF x LCM = Product of two given numbers

314) The HCF of 65 and 117 is expressible in the form 65m - 117.Find the value of m.Also find the LCM of 65 and 117 using prime factorization method.

315) Show that any positive odd integer is of the form 6q + 1,6q + 3 or 6q + 5, where q is some integer.

316) Show that one and only one out of n, n + 2 or n + 4 is divisible by 3, where n is any positive integer

317) Express $\left(\frac{15}{4}+\frac{5}{40}\right)$ as a decimal without actual division.

318) Express the number $0.\overline{3178}$ in the form of rational number a/b.

319) Prove that $3+\sqrt{5}$ is an irrational number

320) If d is the HCF of 30, 72, find the value of x & y satisfying d = 30x + 72y.

321) If the HCF of 657 and 963 is expressible in the form of 657x + 963 x (- 15), find the value of x.

322) Find the smallest number which when increased by 17 is exactly divisible by 520 and 468.

323) Find HCF of 8262 and 101592

324) Prove that square of any positive integer is of the form 4m or 4m + 1 for some integer m.

325) Find the greatest number that will divide 445, 572 and 699 leaving remainders 4, 5 and 6 respectively.

326) Find HCF and LCM of 404 and 96 and verify that HCF x LCM = Product of the two given number.

327) The sum of two numbers is 528 and their HCF is 33, then find the number of pairs satisfying the above condition

328) A class teacher says to the three students Sanjeev, Anjali and Paras for making greeting cards. Each person take time 15, 20, 25 minutes respectively for making these cards.
(i) If all ofthem making card together, then after what time they will prepare a new card together?
(ii) Suppose if all of they start working at same time, in how much time they work together

329) Prove that ($\sqrt{p}$ + $\sqrt{q}$ is irrational, where p and q are primes.

330) Show that every positive even integer is of the form 2q and that every positive odd integer is of the form 2q + 1, where q is an integer.

331) Use Euclid's division algorithm, to find the HCF of 176 and 38220.

332) Thro tankers contain 850 Land 680 L of petrol, respectively. Find the maximum capacity of a container which can measure the petrol of either tanker, in exact number of times.

333) Thro positive integers a and b can be written as a = x^3y^2 and b = xy^3. x, y are the prime numbers. Find the LCM of (a, b).

334) Find the H&F and LCM of 84, 90 and 120 by prime factorisation method

335) The HCF of two numbers a and b is 5 and their LCM is 200. Find the product of ab.

336) A circular field has a circumference of 360 km. Three cyclists start together and can cycle 48,60 and 72 km a day round the field. When will they meet again?

337) Prove that $\frac{2\sqrt{3}}{5}$ is an rational number, given that $\sqrt{3}$ is an irrational number.

338) A sweetseller has 420 kaju barfis and 130 badam barfis. She 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. What is the number of that can be placed in each stack for this purpose?

339) Without actually performing the long division, state whether the following rational number will have a terminating decimal expansion or not. Also, write the terminating decimal expansion, if exist
$\frac{14588}{625}$

340) Without actually performing the long division, state whether the following rational number will have a terminating decimal expansion or not. Also, write the terminating decimal expansion, if exist
$\frac{31}{343}$

341) Without actually performing the long division, state whether the following rational number will have a terminating decimal expansion or not. Also, write the terminating decimal expansion, if exist
$\frac{51}{1500}$

342) $(n^2 + 3n - 4)$ can be expressed as a product of only 2 prime factors where nis a natural number. Find the value(s) of n for which the given expression is an even composite number. Show your work and give valid reasons.

Case Study Questions 9 x 4 = 36

343) Srikanth has made a project on real numbers, where he finely explained the applicability of exponential laws and divisibility conditions on real numbers. He also included some assessment questions at the end of his project as listed below. Answer them.

(i) For what value of n, 4^n ends in 0?

(a) 10	**(b) when n is even**
(c) when n is odd	**(d) no value of n**

(ii) If a is a positive rational number and n is a positive integer greater than 1, then for what value of n, a^n is a rational number?

(a) when n is any even integer	**(b) when n is any odd integer**
(c) for all n > 1	**(d) only when n = 0**

(iii) If x and yare two odd positive integers, then which of the following is true?

(a) $x^2 + y^2$ is even	**(b) $x^2 + y^2$ is not divisible by 4**
(c) $x^2 + y^2$ is odd	**(d) both (a) and (b)**

(iv) The statement 'One of every three consecutive positive integers is divisible by 3' is

(a) always true	**(b) always false**
(c) sometimes true	**(d) None of these**

(v) If n is any odd integer, then n2 - 1 is divisible by

(a) 22 **(b) 55** **(c) 88** **(d) 8**

344) Real numbers are extremely useful in everyday life. That is probably one of the main reasons we all learn how to count and add and subtract from a very young age. Real numbers help us to count and to measure out quantities of different items in various fields like retail, buying, catering, publishing etc. Every normal person uses real numbers in his daily life. After knowing the importance of real numbers, try and improve your knowledge about them by answering the following questions on real life based situations.

(i) Three people go for a morning walk together from the same place. Their steps measure 80 cm, 85 cm, and 90 cm respectively. What is the minimum distance travelled when they meet at first time after starting the walk assuming that their walking speed is same?

(a) 6120 cm (b) 12240 cm (c) 4080 cm (d) None of these

(ii) In a school Independence Day parade, a group of 594 students need to march behind a band of 189 members. The two groups have to march in the same number of columns. What is the maximum number of columns in which they can march?

(a) 9 (b) 6 (c) 27 (d) 29

(iii) Two tankers contain 768litres and 420 litres of fuel respectively. Find the maximum capacity of the container which can measure the fuel of either tanker exactly.

(a) 4litres (b) 7litres (c) 12litres (d) 18litres

(iv) The dimensions of a room are 8 m 25 cm, 6 m 75 crn and 4 m 50 cm. Find the length of the largest measuring rod which can measure the dimensions of room exactly.

(a) 1 m 25cm (b) 75cm (c) 90cm (d) 1 m 35cm

(v) Pens are sold in pack of 8 and notepads are sold in pack of 12. Find the least number of pack of each type that one should buy so that there are equal number of pens and notepads

(a) 3 and 2 (b) 2 and 5 (c) 3 and 4 (d) 4 and 5

345) In a classroom activity on real numbers, the students have to pick a number card from a pile and frame question on it if it is not a rational number for the rest of the class. The number cards picked up by first 5 students and their questions on the numbers for the rest of the class are as shown below. Answer them.

(i) Suraj picked up $\sqrt{8}$ and his question was - Which of the following is true about $\sqrt{8}$?

(a) It is a natural number (b) It is an irrational number

(c) It is a rational number (d) None of these

(ii) Shreya picked up 'BONUS' and her question was - Which of the following is not irrational?

(a) 3-4$\sqrt{5}$(b) $\sqrt{7}$ -6(c) 2+2$\sqrt{9}$(d) 4$\sqrt{11}$-6

(iii) Ananya picked up $\sqrt{5}$ -.$\sqrt{10}$ and her question was - $\sqrt{5}$ -.$\sqrt{10}$ ________is number.

(a) a natural (b) an irrational (c) a whole (d) a rational

(iv) Suman picked up $\frac{1}{\sqrt{5}}$ and her question was - $\frac{1}{\sqrt{5}}$ is _________ number.

(a) a whole (b) a rational (c) an irrational (d) anatural

(v) Preethi picked up $\sqrt{6}$ and her question was - Which of the following is not irrational?

(a) 15 + 3$\sqrt{6}$ (b) $\sqrt{24}$-9 (c) 5.$\sqrt{150}$ (d) None of these

346) Decimal form of rational numbers can be classified into two types.

(i) Let x be a rational number whose decimal expansion terminates. Then x can be expressed in the form $\frac{p}{\sqrt{q}}$ where p and q are co-prime and the prime faetorisation of q is of the form $2^n \cdot 5^m$, where n, mare non-negative integers and vice-versa.

(ii) Let x = $\frac{p}{\sqrt{q}}$ be a rational number, such that the prime faetorisation of q is not of the form $2^n\ 5^m$, where n and m are non-negative integers. Then x has a non-terminating repeating decimal expansion.

(i) Which of the following rational numbers have a terminating decimal expansion?

(a) 125/441 (b) 77/210 (c) 15/1600 (d) 129/(2^2 x 5^2 x 7^2)

(ii) 23/(2^3 x 5^2) =

(a) 0.575 (b) 0.115 (c) 0.92 (d) 1.15

(iii) 441/(2^2 x 5^7 x 7^2) is a_________decimal.

(a) terminating (b) recurring (c) non-terminating and non-recurring (d) None of these

(iv) For which of the following value(s) of p, 251/(2^3 x p^2) is a non-terminating recurring decimal?

(a) 3(b) 7(c) 15(d) All of these

(v) 241/(2^5 x 5^3) is a _________decimal.

(a) terminating (b) recurring (c) non-terminating and non-recurring (d) None of these

347) HCF and LCM are widely used in number system especially in real numbers in finding relationship between different numbers and their general forms. Also, product of two positive integers is equal to the product of their HCF and LCM. Based on the above information answer the following questions.

(i) If two positive integers x and yare expressible in terms of primes as x = p2q3 and y = p3 q, then which of the following is true?

(a) HCF = pq2 x LCM (b) LCM = pq2 x HCF (c) LCM = p2q x HCF (d) HCF = p2q x LCM

(ii) A boy with collection of marbles realizes that if he makes a group of 5 or 6 marbles, there are always two marbles left, then which of the following is correct if the number of marbles is p?

(a) p is odd (b) p is even (c) p is not prime (d) both (b) and (c)

(iii) Find the largest possible positive integer that will divide 398, 436 and 542 leaving remainder 7, 11, 15 respectively.

(a) 3 (b) 1 (c) 34 (d) 17

(iv) Find the least positive integer which on adding 1 is exactly divisible by 126 and 600.

(a) 12600(b) 12599(c) 12601(d) 12500

(v) If A, Band C are three rational numbers such that 85C - 340A :::109, 425A + 85B = 146, then the sum of A, B and C is divisible by

(a) 3 (b) 6 (c) 7 (d) 9

348) The department of Computer Science and Technology is conducting an International Seminar. In the seminar, the number of participants in Mathematics, Science and Computer Science are 60, 84 and 108 respectively. The coordinator has made the arrangement such that in each room, the same number of participants are to be seated and all of them being in the same subject. Also, they allotted the separate room for all the official other than participants.

(i) Find the total number of participants.

(a) 60 (b) 84 (c) 108 (d) none of these

(ii) Find the LCM of 60, 84 and 108.

(a) 12 (b) 504 (c) 544320 (d) 3780

(iii) Find the HCF of 60, 84 and 108.

(a) 12 (b) 60 (c) 84 (d) 108

(iv) Find the minimum number of rooms required, if in each room, the same number of participants are to be seated and all of them being in the same subject.

(a) 12 (b) 20 (c) 21 (d) none of these

(v) Based on the above (iv) conditions, find the minimum number of rooms required for all the participants and officials.

(a) 12 (b) 20 (c) 21 (d) none of these

349) Aditya works as a librarian in Bright Children International School in Indore. He ordered for books on English, Hindi and Mathematics. He received 96 English books, 240 Hindi Books and 336 Maths books. He wishes to arrange these books in stacks such that each stack consists of the books on only one subject and the number of books in each stack is the same. He also wishes to keep the number of stacks minimum.

(a) Find the number of books in each stack.

(i) 24 (ii) 48 (iii) 54 (iv)72

(b) Find the total number of stacks formed.

(i) 7 (ii) 10 (iii) 14 (iv) 16

(c) How many stacks of Mathematics books will be formed?

(i) 7 (ii) 8 (iii) 9 (v) 10

(d) If the thickness of each English book is 3 cm, then the height of each stack of English books is

(i) 120 cm (ii) 124 cm (iii) 136 cm (iv) 144 cm

(e) If each Hindi book weighs 1.5 kg, then find the weight of books in a stack of Hindi books.

(i) 24 kg (ii) 48 kg (iii) 72 kg (iv) 96 kg

350) To enhance the reading skills of grade X students, the school nominates you and two of your friends to set up a class library. There are two sections- section A and Section B of grade X. There are 32 students in section A and 36 students in section B.

(i) What is the minimum number of books you will acquire for the class library, so that they can be distributed equally among students of section A or section B?

(a) 144 (b) 128

(c) 288 (d) 272

(ii) If the product of two positive integers is equal to the product of their HCF and LCM is true, then the HCF (32, 36) is

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

(iii) 36 can be expressed as a product of its primes as

(a) $2^2 \times 3^2$ (b) $2^1 \times 3^3$ (c) $2^3 \times 3^1$ (d) $2^0 \times 3^0$

(iv) $7 \times 11 \times 13 \times 15 + 15$ is a

(a) prime number

(b) composite number

(c) neither prime nor composite

(d) None of the above

(v) If p and q are positive integers such that $p=ab^2$ and $q= a^2b$, where a and b are prime numbers, then the LCM (p, q) is

(a) ab (b) a^2b^2 (c) a^3b^2 (d) a^3b^3

351) A seminar is being conducted by an Educational Organisation, where the participants will be educators of different subjects. The number of participants in Hindi, English and Mathematics are 60, 84 and 108, respectively.

(i) In each room the same number of participants are to be seated and all of them being in the same subject, hence maximnum number participants that can accommodated in each room are

(a) 14 (b) 12 (c) 16 (d) 18

(ii) What is the minimum number of rooms required during the event?

(a) 11 (b) 31 (c) 41 (d) 21

(iii) The LCM of 60, 84 and 108 is

(a) 3780 (b) 3680 (c) 4780 (d) 4680

(iv) The product of HCF and LCM of 60, 84 and 108 is

(a) 55360 (b) 35360 (c) 45500 (d) 45360

(v) 108 can be expressed as a product of its primes as

(a) $2^3 \times 3^2$ (b) $2^3 \times 3^3$ (c) $2^2 \times 3^2$ (d) $2^2 \times 3^3$

5 Marks 96 x 5 = 480

352) Show that $5 - \sqrt{3}$ is irrational.

353) Find the LCM and HCF of the following pairs of integers and verify that LCM x HCF = Product of the two numbers.

26 and 91

354) Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers.

355) There is a circular path around a sports field. Sonia takes 18 min to drive one round of the field, while Ravi takes 12 min for the same. Suppose they both start at the same point and at the same time and go in the same direction. After how many minutes will they meet again at the starting point?

356) Prove that $\sqrt{5}$ is irrational number.

357) Find the LCM and HCF of the following integers by applying the prime factorisation method.
12, 15 and 21

358) Prove that $\sqrt{2}$ is an irrational .

359) Prove that $\sqrt{3}$ is an irrational number.

360) State and Prove Fundamental Theorem of Arithmetic.

361) Express each number as a product of its prime factors.
(i) 140
(ii) 156
(iii) 3825
(iv) 5005
(v) 7429

362) A number when divided by 53 gives 34 as quotient and 21 as remainder. Find the number.

363) In Euclid's division lemma a = bq + r, where $0 \leq r < b$. What is a?

364) The product of two consecutive positive integers is divisible by 2. Is this statement true or false? Give reason.

365) Show that any positive integer is of the form 3q or 3q + 1 or 3q + 2 for some integer q.

366) Write whether every positive integer can be of the form 4q + 2, where q is an integer. Justify your answer.

367) Show that the square of an odd positive integer is of the form 8m + 1, where m is some whole number.

368) Use the Euclid's division algorithm to find the HCF of
(i) 650 and 1170
(ii) 870 and 225

369) Use Euclid's division algorithm to the HCF of the following three numbers.
(i) 441, 567 and 693
(ii) 1620, 1725 and 255

370) Three pieces of timber 42 m, 49 m and 56 m long have to be divided into planks of the same length. What is the greatest possible length of each plank?

371) Explain whether the following numbers are prime or composite number.
7 x 11 x 13 +13

372) Can the number 16^n , n being a natural number, end with the digit 0? Give reason.

373) If two positive integers a and b are written as a = x^3y^2 and b = xy^3; where x, y are prime numbers, find the HCF of a and b.

374) If two positive integers p and q can be expressed as p = ab^2 and q = a^3b; where a,b being prime numbers, find the LCM (p,q)

375) Find the HCF and LCM of 60, 84 and 108 by using the prime factorisation method.

376) Find the greatest possible length which can be used to measure exactly the length 7m, 3m 85 cm and 12m 95 cm.

377) If the LCM of 26 and 91 is 182. find their HCF.

378) If the HCF of 150 and 100 is 50, find the LCM of 150 and 100.

379) The HCF of two numbers is 113 and their LCM is 56952. If one number is 904, find the other number.

380) If HCF (253, 440) = 11 and LCM (253, 440) = 253 x R. Find the value of R.

381) Find the HCF of 26 and 455. With the help of HCF, find LCM also.

382) If LCM of 12 and 42 is 10m + 4. find the value of m.

383) If HCF of 210 and 55 is expressible in the form 210 x 5 - 55x, find the value of x.

384) Find the least number that is divisible by all the numbers from 1 to 10 (both inclusive).

385) Is product of a rational number and an irrational number, a rational number? Is product of two irrational numbers. rational or irrational number? Justify by giving examples.

386) Prove that $2\sqrt{3}+\sqrt{5}$ is an irrational number. Also, check whether $\left(2\sqrt{3}+\sqrt{5}\right).\left(2\sqrt{3}-\sqrt{5}\right)$ is rational or irrational.

387) Show that $\left(\sqrt{3}+\sqrt{5}\right)^2$ is an irrational number.

388) If $\frac{7}{625}$ is a rational number, find the decimal expansion of it, which terminate.

389) Express the number $0.3\overline{178}$ in the form of rational number a/b.

390) Without actually performing the long division, state whether $\frac{543}{225}$ has a terminating decimal expansion or non-terminating recurring decimal expansion.

391) The decimal expansion of the rational number $\frac{43}{2^4\times5^3}$ will terminate after how many places of decimal?

392) If $\frac{241}{4000}=\frac{241}{2^m\times5^n}$, then find the values of m and n, where m and n are non-negative integers. Hence, write its decimal expansion without actual division.

393) What can you say about the prime factorisation of the denominators?
(i) 34.12345 (ii) $34.\overline{5678}$

394) Use Euclid's division algorithm to find the HCF of 135 and 225.

395) Show that any positive odd integer is of the form 6q + 1 or 6q + 3 or 6q + 5, where q is some integer.

396) An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?

397) Use Euclid's division lemma to show that the square of any positive integer is either of the form 3m or 3m + 1, for some integer m.

398) Use Euclid's division lemma to show that the cube of any positive integer is either of the form 9m or 9m + 1 or 9m + 8.

399) If HCF of 306 and 657 is 9, then find their LCM.

400) Prove that the following are irrationals.
(i) $\frac{1}{\sqrt{2}}$

401) If the HCF of 657 and 963 is expressible in the form of 657x + 963 (-15), find x.

402) If $\sqrt{ab}$ is an irrational number, prove that $\left(\sqrt{a}+\sqrt{b}\right)$ is an irrational number.

403) Prove that, if a, b, c and d are positive rationals such that $a+\sqrt{b}=c+\sqrt{d}$, then either a = c and b = d or b and d are squares of rationals.

404) A trader was moving along a road selling eggs. An idler who did not have much work to do, started to get the trader into a word duel. This grew into a fight, he pulled the basket with eggs and dashed it on the floor. The eggs broke. The trader requested the panchayat to ask the idler to pay for the broken eggs. The panchayat asked the trader how many eggs were broken?
He gave the following response
If counted in pairs, one will remain. If counted in 3's, two will remain. If counted in 4's, three will remain. If counted in 5's, four will remain. If counted in 6's, five will remain. If counted in 7's, nothing will remain and my basket cannot accommodate more than 150 eggs.
(i) How many eggs were there?
(ii) Which mathematical concept is used to solve the above problem?
(iii) What is the value shown by the trader in the question?

405) Use Euclid's division algorithm, to find the largest number, which divides 957 and 1280 leaving remainder 5 in each case.

406) Ravi and Shikha drive around a circular sports field. Ravi takes 16 min to complete one round, while Shikha completes the round in 20 min. If both start at the same point, at the same time and go in the same direction, then after how much time will they meet at the starting point?

407) The traffic lights at three different roads crossings change after 48, 72 and 108 s, respectively. If they change simultaneously at 7 am, then at what time will they change simultaneously again?

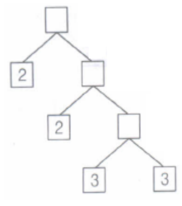
408) Six bells commence tolling together and toll at intervals 2, 4, 6, 8, 10 and 12 min, respectively. After how many minutes they will toll together?

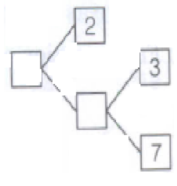
409) In the next Republic Day parade, the commander of an army contingent consisting of 624 members wants to march his contingent behind an army band of 32 members such that the two groups march in the same number of columns.
(i) What is the maximum number of columns in which the two groups can march?
(ii) What value is depicted from this action?

410) Two sets of English and Social Science Books containing 336 and 96 books respectively in a library, have to be stacked in such a way that all the books are stored topicwise and the height of each stack is the same. Assuming that the books are of the same thickness, determine the total number of stacks. What are the characteristics of library?
[Number of stacks = $\frac{336+96}{HCF(336,96)}$]

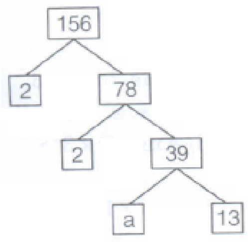
411) A bookseller has 420 Science stream books and 130 Arts stream books. He wants to stack them in such a way that each stack has the same number and they take up the least area of the surface.
(i) What is the maximum number of Science stream books that can be placed in each stack for this purpose?
(ii) Which mathematical concept is used to solve the problem?
(iii) If the bookseller makes a stack, then which kinds of quality are shown by the bookseller?

412) Write the missing numbers is the following factorisation.

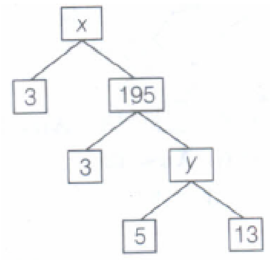
(i) 

(ii) 

413) See the following factor tree for factorisation of 156. Find the value of a.



414) Complete the following factor tree and find the composite number x.



415) Factorise 612 and 1314 by using tree method and find HCF and LCM.

416) Find HCF of 378, 180 and 420 by prime factorization method. Is HCF x LCM of three numbers equal to the product of the three numbers?

417) State Fundamental theorem fo Arithmetic. Find LCM of numbers 2520 and 10530 by prime factorization method.

418) Can the number 6^n, n being number, end with the digit 5 ? Give reasons.

419) State Fundamental theorem of Arithmetic. Is it possible that HCF and LCM of two numbers be 24 and 540 respectively. Justify your answer.

420) Find the HCF of 256 and 36 using Euclid's Division Algorithm. Also, find their LCM and verify that HCF x LCM = Product of the two numbers.

421) A fruit vendor has 990 apples and 945 oranges. He packs them into baskets. Each basket contains only one of the two fruits but in equal number. Find the number of fruits to be put in each basket in order to have minimum number of baskets.

422) For any positive integer n, prove that n^3 - n is divisible by 6.

423) Prove that n^2-n is divisible by 2 for every positive integer n.

424) Find HCF of SI and 237 and express it as a linear combination of SI and 237 i.e., HCF (81, 237) = 81x + 237y for some x and y.

425) Show that the square of any positive integer is of the form 4m or 4m + 1, where m is any integer.

426) Three sets of English, Hindi and Sociology books dealing with cleanliness have to be stacked in such a way that all the books are stored topicwise and the height of each stack is the same. The number of English books is 96, the number of Hindi books is 240 and the number of sociology books is 336.
(i) Assuming that the books are of the same thickness, determine the number of stacks of English, Hindi and Sociology books.
(ii) Which mathematical concept is used in the problem?
(iii) Which good habit is discussed in this problem?

427) Show that $5 + 3\sqrt{2}$ is an irrational number.

428) Prove that $\frac{2\sqrt{3}}{5}$ is irrational

429) Show that $\sqrt[3]{6}$ is an irrational number.

430) Prove that $\sqrt{p} + \sqrt{q}$ is irrational, where p, q are primes.

431) Let a, b, c and p be the rational numbers such that p is not a perfect cube if a + $bp^{1/3}$ + $Cp^{2/3}$ = 0, then prove that a = b= c.

432) Find the HCF of 55 and 210. Express it as a linear combination of 55 and 210, i.e. HCF of 55 and 210 = 210a + 55b, for some a and b.

433) State and Prove Euclid’s Division Lemma Algorithm.

434) Use Euclid’s algorithm to find the HCF of 4052 and 12576.

435) Let x be a rational number whose decimal expansion terminates. Then x can be expressed in the form , $\frac{p}{q}$ where p and q are coprime, and the prime factorisation of q is of the form 2^n5^m, where n, m are non-negative integers.
You are probably wondering what happens the other way round .That is, if we have a rational number of the form , $\frac{p}{q}$ and the prime factorisation of q is of the form 2^n5^m , where n, m are non negative integers, then does $\frac{p}{q}$ have a terminating decimal expansion?
Let us see if there is some obvious reason why this is true. You will surely agree that any rational number of the form , $\frac{a}{b}$ where b is a power of 10, will have a terminating decimal expansion. So it seems to make sense to convert a rational number of the form $\frac{p}{q}$, where q is of the form 2^n5^m , to an equivalent rational number of the form ,$\frac{a}{b}$ where b is a power of 10. Let us go back to our examples above and work backwards.

436) Let x =$\frac{p}{q}$ be a rational number, such that the prime factorisation of q is of the form 2^n5^m , where n, m are non-negative integers. Then x has a decimal expansion which terminates.

437) Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion.
$\frac{6}{15}$

438) The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form, $\frac{p}{q}$ what can you say about the prime factors of q?
$43.\overline{123456789}$

439) Find the HCF of 180, 252 and 324 by using Euclid's division lemma.

440) Factorise the number 4095 through factor tree.

441) Explain whether the following numbers are prime or composite number.
(3 x 5 x 13 x 46) + 23

442) Explain whether the following numbers are prime or composite number.
2 x 3 x 3 x 5+ 5

443) Explain whether the following numbers are prime or composite number.
5 x 4 x 3 x 2 x 1+10

444) Explain whether the following numbers are prime or composite number.
7 x 11 x 13 + 5

445) Express decimal expansion 23.3408 in the form a rational number.

446) In the next Republic Day parade, the commander of an army contingent consisting of 624 members wants to march his contingent behind an army band of 32 members such that the two groups march in the same number of columns.
What is the maximum number of columns in which the two groups can march?

447) Grow More plantations have two rectangular fields of the same width but different lengths. They are required to plant 84 trees in the smaller field and 231 trees in the larger field. In both fields, the trees will be planted in the same number of rows but in different numbers of columns.
(i) What is the most number of rows that can be planted in this arrangement? Show your work.
(ii) If the trees are planted in the rnumber of rows obtained in part (i), how many columns will each field have?

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