MATHS

BOOKS - VK GLOBAL PUBLICATION MATHS (HINGLISH)

REAL NUMBERS

Very Short Answer Questions

1. What is the HCF of the smallest composite number and the smallest prime number?

2. The decimal representation of $\dfrac{6}{1250}$ will terminate after how many places of decimal?

3. If HCF of a and b is 12 and product of these numbers is 1500. Then what is LCM of these numbers?

4. What is the HCF of $3^3 \times 5$ and $3^2 \times 5^2$?

5. If a is an odd number, b is not divisible by 3 and LCM of a and b is P, what is the LCM of 3a and 2b?

6. If p is the prime number then what is H.C.F. and L.C.M of p, p^2, p^3

7. Two positive integers p and q can be expressed as $p = ab^2$ and $q = a^2b$, and b are prime numbers. what is L.C.M of p and q.

8. A number N when divided by 14 given the remainder 5. What is the remainder when the same number is divided by 7?

9. Examine whether $\dfrac{17}{30}$ is a terminating decimal

10. What are the possible values of remainder r, when a positive integer a is divided by 3?

11. A rational number in its decimal expansion is 1.7351. What can you about the prime factors of q this number is expressed in the form $= \frac{p}{q}$ Give reason.

12. Without actually performing the long divison, find if $\dfrac{987}{10500}$ will have terminating or non-terminating (repeating) decimal expansion. Give reasons for your answer

Short Answer Questions I

1. Show that any number of the form $4^n, n = N$ can never end with the digit 0.

2. Write whether the square of any positive integer can be of the form 3m+2, where m is a natural number. Justify answer.

3. Can two number have 18 as their HCF and 380 as their LCM? Give reason

4. Write a rational number between $\sqrt{3}$ and $\sqrt{5}$.

5. The product of two consecutive integers is divisible by 2. Is this statement true or false. Give Reason?

6. Explain why $3 \times 5 \times 7 + 7$ is a composite number.

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7. What is the least number that is divisible by all the numbers 1 to 10

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8. Find the sum $0.\overline{68} + 0.\overline{73}$

9. The product of two numbers is 600 and if LCM of both the numbers are 120 then find their HCF.

Short Answer Questions Ii

1. 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 ?

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

method. (i) 12,15 and 21 (ii) 17, 23 and 29 (iii) 8,9 and 25

3. Find the LCM and HCF of the following pairs of integers and verify that L$LCM \times HCF =$ product of the two numbers.(i) 26 and91 (ii) 510 and 92 (iii) 336 and 54

4. There is a circular path around a sports field. Soma takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. Afte

5. Write down the decimal expansions of the following numbers.

(i) $\dfrac{35}{50}$ (ii) $\dfrac{15}{1600}$

6. Express the numbers $0.\overline{3178}$ in the form of rational numbers $\dfrac{a}{b}$.

7. If n is an odd positive integer, show that $\left(n^2 - 1\right)$ is divisible by 8.

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

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9. express $0.1\overline{25}$ in the form of $\dfrac{p}{q}$.

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

11. The decimal expansions of some real numbers are given below. In each case, decide whether they are rational or not. If they are rational, write it in the form $\frac{p}{q}$.

(i) 0.140140014000140000... (ii) $0.\overline{16}$

Long Answer Questions

1. 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.[Hint: Let x be any positive integer then it is of the form $3q$, $3q+1$ or $3q+2$ Now square each of these and sho

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

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3. Use Euclid's division algorithm to find the HCF of 960 and 432

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4. find the HCF and LCM of 30, 72 and 108. Also show that $HCF \times LCM \neq$ Product of the three numbers

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5. Prove that $\sqrt{7}$ is an irrational number.

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6. Prove that $5 - \sqrt{3}$ is an irrational number.

7. Using Euclid's division algorithm, find whether the pair of numbers 847, 2160 are co-prime or not.

8. Check whether 6^n can end with the digit '0' (zero) for any natural number n .

1. Show that there is no positive integer n for which $\sqrt{n-1} + \sqrt{n+1}$ *is rational.*

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2. Let a, b, c, k be rational numbers such that k is not perfect cube if $a + bk^{\frac{1}{3}} + ck^{\frac{2}{3}} = 0$ prove that $a = b = c = 0$

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3. Find the largest number that will divide 398, 436 and 542 leaving remainders 7,11 and 15 respectively.

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Proficiency Exercise Very Short Answer Questions

1. What can you say about the prime factorisation of the denominators of the

rational number $0.\overline{1347}$

2. A rational number in its decimal expansion is 1.7112. What can you say about the prime factors of q, when this number is expressed in the form p/q?

3. State whether $\dfrac{6}{200}$ has terminating or non-terminating repeating decimal expansion.

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4. What type of decimal expansion does $\dfrac{29}{2^2 \times 5 \times 7}$ have?

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5. If two positive integers a and b are written as $a = x^4y^2$ and $b = x^3y$, where x, y are prime numbers, then find HCF (a, b).

6. If positive integers a and bare written as $a = xy^2$ and $b = x^2y$, wherex, y are prime numbers, then find LCM (a, b)

7. After how many decimal places will the decimal expansion of the rational number $\dfrac{47}{2^3 5^2}$ terminate?

8. After how many places will the decimal expansion of $\dfrac{189}{125}$ terminate?

Proficiency Exercise Short Answer Questions I

1. The number 525 and 3000 are both divisible only 3,5,15,25,75. What is HCF (525, 3000)? Justify your answer.

2. After how many places will the decimal expansion of $\dfrac{147}{75}$ terminate?

3. Given that LCM (26, 169) = 338, find HCF (26, 169).

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

5. A positive integer is the form of 3q+1 q, being a natural number. Can you write its square in any form other than 3m+1 i.e. 3m or 3m+2 for some integer? Justify your answer.

6. Find the least number that is divisible by first five even numbers.

7. Find HCF of $\left(x^2 - 3x + 2\right)$ and $\left(x^2 - 4x + 3\right)$.

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8. Find the LCM of $x^2 - 4$ and $x^4 - 16$.

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Proficiency Exercise Short Answer Questions Ii

1. Show that 12^n cannot end with the digits 0 or 5 for any natural number n

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

3. Find the HCF (210, 55) by Euclid's Division algorithm

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

5. Write the denominator of the rational number $\dfrac{257}{5000}$ in the form $2^m \times 5^n$, where m, n and non-negative integers. Hence, write its decimal expansion without actual division.

6. Using prime factorisation method, find the LCM or 21, 28, 36, 45.

7. Prove that $\dfrac{1}{\sqrt{3}}$ is irrational.

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8. Use Euclid's division algorithm to find the HCF of: (i) 4052 and 12576 (ii) 216 and 297

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9. Find the greatest number of 6 digits exactly divisible by 24, 15 and 36.

10. express the given decimal expansion in the form of $\frac{p}{q}$

$0.2\overline{26}$

11. Show that 9^n cannot end with the digit 2 for any $n \in N$.

12. Express 3825 as product of its prime factors

using factor tree.

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13. Find the HCF of 306 and 657 by the prime

factorisation method. Hence find their LCM.

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

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

16. The length, breadth and height of a room are 8m and 25cm, 6m and 75m and 4m 50cm,

respectively. Determine the longest rod which can measure the three dimensions of the room exactly.

17. In a morning walk, three persons step off together and their steps measure $40cm$, $42cm$ and 45cm, respectively. What is the minimum distance each should walk so that each can cover thesame distance in complete steps?

18. Find the LCM and HCF of the following pairs of integers and verify that L $LCM \times HCF =$ product of the two numbers.(i) 26 and91 (ii) 510 and 92 (iii) 336 and 54

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19. Find the largest number which divides 318 and 739 leaving remainder 3 and 4 respectively.

Proficiency Exercise Long Answer Questions

1. Show that the cube of a positive integer of the form $6q + r, q$ is an integer and r=0,1,2,3,4,5 is also of the form 6m+r

2. 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.

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3. Use Euclid's division algorithm to find HCF of 177 and 210

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4. Show that the square of any positive integer cannot be of the form 6m+2 or 6m+5 for some integer q.

5. Prove that $2 + \sqrt{5}$ is an irrational number.

6. Prove that $3 - \sqrt{5}$ is an irrational number

7. Prove that $\sqrt{p} + \sqrt{q}$ is an irrational, where p and q are primes.

8. Prove that $\sqrt{5}$ is an irrational number and hence show that $3 + \sqrt{5}$ is also an irrational number.

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

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Self Assessment Test

1. What is the LCM of p and q where $p = a^3b^2$ and $q = b^3a^2$?

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2. A number N when divided by 10,000 gives the remainder 57. What is the remainder when the same number is divided by 1000.

3. Euclid's division Lemma states that for two positive integers a and b, there exist unique integers q and r such that $a = bq + r$ where r must satisfy.

4. After how many places of decimals will the

decimal expansion of $\dfrac{23457}{2^3 \times 5^4}$ terminate?

5. Find the HCF of 867 and 255, using Euclid's

division algorithm.

6. 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 some integer.

7. Express 32760 as product of its prime factors using factor tree.

8. Show that the square of any positive integer cannot be of the form 6m+2 or 6m+5 for some integer q.

9. Prove that $\sqrt{2} + \dfrac{3}{\sqrt{2}}$ is an irrational number.

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

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11. After how many places decimal expansion of $\dfrac{3147}{1875}$ will terminate

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