MATHS

BOOKS - OSWAAL PUBLICATION MATHS (KANNADA ENGLISH)

REAL NUMBERS

Topic 1 Euclid S Division Algorithm Multiple Choice Questions

1. By applying Euclid's division lemma, 72 and 28 can be expressed as :

A. $28 = (72 - 16) \times 2$

B. $72 = (28 \times 2) + 16$

C. $72 = (28 \times 2) - 16$

D. $16 = 72 - (28 + 2)$

Answer: B

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2. The relationship between the dividend (a), divisor (b), quotient (q) and the remainder (r) is :

A. $a = (b + q) \times r$

B. $a = (b - q) \times r$

C. $a = (b - r) \times q$

D. $a = (b \times r) \times q$

Answer: D

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3. Euclids Division Lemma states that for any two positive integers a and b, there exists unique integers q and r such that $a = bq + r$, where r must satisfy.

A. $0 < r < b$

B. $0 \leq r < b$

C. $0 < r \leq b$

D. $0 \leq r \leq b$

Answer: B

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4. For any positive integer a and 3, there ex:ist unique integers q and r such that a = 3q + r, where r must satisfy:

A. $0 \leq r < 3$

B. $1 < r < 3$

C. $0 < r < 3$

D. $0 < r \leq 3$

Answer: A

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5. If q is some integer, then any positive odd integer is of the form :

A. 6q

B. 6q+1

C. 6q+2

D. 6q+4

Answer: B

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6. $n^2 - 1$ is divisible by 8, if n is

A. an integer

B. natural number

C. an odd number

D. an even integer

Answer: C

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7. For q to be an integer, then any integer can be expressed as a equals to :

A. $3q + 1$

B. $3q, 3q + 1, 3q + 2$

C. $3q$

D. $3q + 1, 3q + 2, 3q + 3$

Answer: B

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8. If the H.C.F. of 65 and 117 is expressible in the form of $65m - 117$, then the value of m is

A. 4

B. 2

C. 11

D. 3

Answer: B

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9. A number N when divided by 14 remainder 5. The remainder when number is divided by 7 is :

A. 7

B. 0

C. 5

D. 4

Answer: C

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10. The remainder when the square of any prime number greater than 3 is divided by 6 is :

A. 1

B. 3

C. 2

D. 4

Answer: A

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Topic 1 Euclid S Division Algorithm Very Short Answer Type Questions

1. State Euclid's division lemma

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2. Using Euclid's division algorithm, find the HCF of 65 and 117.

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3. Find the remainder when the square of any prime number greater than 3 is divided by 6.

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4. What is the use of Euclid's division lemma ?

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5. What is the number of the form (4m+1) ?

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6. What is the base of Eulid's division algorithm?

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7. Whal is the number of the form (4m+2) ?

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8. Write the even prime number.

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9. Write a number which is neither prime nor composite.

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Topic 1 Euclid S Division Algorithm Short Answer Type Questions

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

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2. There are 75 roses and 45 lily Bowers. These are to be made into bouquets containing both the flowers. All the bouquets should contain the nme number of flowers.

Find the number of bouquets that can be formed and the number of flowers in them.

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3. The length and breath of a rectangular field is 110 m and 30 m respectively. Calculate the length of the longest rod which can measure the length and breadth of the field exactly.

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4. Find the HCF of 1656 and 4025 by Euclid's division algorithm.

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

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Topic 1 Euclid S Division Algorithm Long Answer Type Questions 1

1. Prove that the product of three consecutive positive integers is divisible by 6.

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2. Show that any positive even int.eger is of the form 4q or 4q + 2,, where q is a whole number.

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3. 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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4. The HCF of 65 and 117 is expressible in the form 65m-117. Flnd the value of m. Also find the LCM of 65 arid 117 using prime factorization method.

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Topic 1 Euclid S Division Algorithm Long Answer Type Questions Ii

1. Use Euclid's division algorithm to find the HCF of following numben :

(a) 65 and 111 (b) 237 and 81

(c) 55 and 210 (d) 305 and 793

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2. Find HCF of 81 and 237 and expraa it as a linear combination of 81 and 237 i.e., HCF of 81, 237 = 81x + 237y for some x and y.

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Topic 2 Prime Factorization H C F L C M Multiple Choice Questions

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

A. 2

B. 3

C. 5

D. 8

Answer: A

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2. The HCF of $3^3 \times 5$ and $3^2 \times 5^2$ is t

A. 45

B. 25

C. 675

D. 135

Answer: A

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3. The number of prime factors of 145 is:

A. 2

B. 3

C. 4

D. 5

Answer: A

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4. If two positive integers p and q cui be expressed as p = a^3b^2 and q $= ab^3c^2$ and a, b, c being prime numbers, then HCF (p, q) is:

A. abc

B. ab^2

C. $a^3b^3c^2$

D. $a^2b^2c^2$

Answer: B

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5. LCM of $2^3 \times 3^2$ and $2^2 \times 3^3$

A. 2^3

B. 3^3

C. $2^3 \times 3^3$

D. $2^2 \times 3^2$

Answer: C

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Topic 2 Prime Factorization H C F L C M Very Short Answer Type Qeustions

1. Express 140 as a product of prime factors.

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2. In prime factorization of 1309 write the highest prime factor.

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3. Express 210 as the product of prime factors.

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4. Express 6762 as the product of prime factors.

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

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6. Find the LCM and HCF of $\frac{1}{2}, \frac{1}{3}$

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Topic 2 Prime Factorization H C F L C M Short Answer Type Qeustions

1. Prove $3+\sqrt{5}$ is inational

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2. Find HCF of 14 and 21

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

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4. A rectangular hall is 18 m 72 cm long and 13 m 20 cm broad. It is to be paved with square tiles of the same size. Find the least possible number of such tile.

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5. IF 25025 $=p_2^{x1}, p_2^{x2}, p_3^{x3}, p_4^{x4}$ find the values of p_1, pz, p_3, p_4 and x_1, x_2, x_3, x_4.

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6. Find the HCF of 105 and 1515 by prime factorization method.

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7. Find the LCM and HCF of the following integers by expressing them as product of primes :

(i) 12 ,15 and 30 (b) 18 , 81 and 108

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Topic 2 Prime Factorization H C F L C M Long Answer Type Qeustions I

1. x,y and z start at the same time in the same direction to run around a circular stadium x completes a round in 126 seconds, y in 154 seconds and z in 231 seconds all starting at the same poinl After what time will they meet again at the starting point. How many rounds would have x, y and z completed by this time?

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Topic 3 L C M And Formula Multiple Choice Questions

1. If a is an odd number, b is not divisible by 3 and LCM or a and b is p, then LCM of 3a and 2b is :

A. p^2

B. 5p

C. 6p

D. 3p

Answer: C

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2. Two positive integers p and q can be expressed as p = ab^2 and q = a^3b, a and b being prime numbers. LCM of p

and q is :

A. ab

B. a^2b^2

C. a^3b^2

D. a^3b^3

Answer: c

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3. The HCF of two numbers '11' and 'b' is 5 and their LCM is 200, then the product of 'a' and 'b' is :

A. 205

B. 1000

C. 200

D. 195

Answer: B

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Topic 3 L C M And Formula Very Short Answer Type Questions

1. Find

$$\left(\frac{\text{HCF of two distinct natural numbers}}{\text{LCM of same distinct natural numbers}}\right)$$

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2. If a and b are any two positive integers then HCF (a,b)

× LCM (a,b) is equal to

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Topic 3 L C M And Formula Short Answer Type Questions

1. If HCF of 52 and 182 is 26, find their LCM.

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2. Given that HCF (306, 1314) = 18. Find LCM (306, 1314).

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Topic 3 L C M And Formula Long Answer Type Questions I

1. Find the HCF and LCM of the pairs of integers and verify that LCM (a, b) $\times$ HCF (a, b) = $a \times b$.

(a) 16 and 80 (b) 125 and 55

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2. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = product of the two numbers

510 and 92

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Topic 4 Irrational Numbers Rational Numbers Short Answer Type Questions

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

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2. P.T $5-\sqrt{3}$ is irrational.

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Topic 4 Irrational Numbers Rational Numbers Long Answer Type Questions I

1. If p prime number, then prove that $\sqrt{p}$ is irrational ?

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2. Prove that $\sqrt{2}$ is irrational .

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3. Prove that the $\left(\sqrt{2}+\sqrt{5}\right)$ are irrational numbers.

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Topic 4 Irrational Numbers Rational Numbers Long Answer Type Questions Ii

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

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Textbook Corner Exercise 8 1

1. (i) Use Euclid's division algorithm to find the HCF of: 135 and 225

(ii) Use Euclid's division algorithm to find the HCF of: 196 and 38220

(iii) Use Euclid's division algorithm to find the HCF of: 867 and 255,

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

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3. 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?

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4. 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 show that they can be rewritten in the form $3m$ or $3m + 1$.]

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5. 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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Textbook Corner Exercise 8 2

1. Express each number as a product of its prime factors:

140

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2. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = product of the two numbers

26 and 91

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

12, 15 and 21

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

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

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6. 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.

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7. There is a circular path around a sports field. Sonia 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. After how many minutes will they meet again at the start- ing point?

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Textbook Corner Exercise 8 3

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

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2. Prove that $3 + 2\sqrt{5}$ is an irrational number .

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3. Prove that following are irrational

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Textbook Corner Exercise 8 4

1. 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

$$\frac{13}{3125}$$

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2. 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

$$\frac{17}{8}$$

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3. 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

$$\frac{64}{455}$$

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4. 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

$$\frac{15}{1600}$$

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5. 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

$$\frac{29}{343}$$

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6. 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

$$\frac{23}{2^3 5^2}$$

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7. 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

$$\frac{129}{2^2 5^7 7^5}$$

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8. 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

$\frac{6}{15}$

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9. 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

$\frac{35}{50}$

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10. 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

$$\frac{77}{210}$$

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11. Write down the decimal expansions of $\frac{17}{8}$

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12. 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

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