



MATHS

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REAL NUMBERS

Objective Type Questions Multiple Choice Questions

1. The sum of exponents of prime factors in the prime -factorisation of 196 is

A. 3

B. 4

C. 5

D. 6

Answer: B



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2. What is the total number of factors of a prime number?

A. 1

B. 0

C. 2

D. 3

Answer: C



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3. The HCF and the LCM of 12,21,15 respectively are

A. 3,140

B. 12,420

C. 3,420

D. 420,3

Answer: C



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4. The decimal representation of $\frac{11}{2^3 \times 5}$ will

A. terminate will 1 decimal place

B. terminate after 2 decimal place

C. terminate after 3 decimal places

D. not terminate

Answer: C



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5. The LCM of smallest two digit composite number and smallest composite number is

A. 12

B. 4

C. 20

D. 44

Answer: C



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6. IF two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$ where x and y are prime numbers, then the HCF (a,b) is

A. xy

B. xy^2

C. x^3y^3

D. x^2y^2

Answer: B



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7. If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$ 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

Answer: C



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8. Explain why: $7 \times 11 \times 13 \times 15 + 15$ is a composite number.

A. Composite number

B. whole number

C. prime number

D. a and b both

Answer: B



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9. LCM of $(2^3 \times 3 \times 5)$ and $(2^4 \times 5 \times 7)$ is

A. 40

B. 560

C. 1120

D. 1680

Answer: D



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10. 1.23451326 is

- A. an integer
- B. an irrational number
- C. a rational number
- D. none of these

Answer: B



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11. If the LCM of a and 18 is 36 and the HCF of a and 18 is 2, then $a =$ (a) 2 (b) 3 (c) 4 (d) 1

A. 1

B. 2

C. 3

D. 4

Answer: D



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12. The product of a non-zero rational number with an irrational number is always a/an

- A. always irrational
- B. always rational
- C. rational or irrational
- D. one

Answer: A



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13. The number of decimal places after which the decimal expansion of the rational number

$\frac{9}{2^4 \times 5}$ will terminate is:

A. 1

B. 2

C. 3

D. 4

Answer: D



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14. A number that is divisible by all the numbers from 1 to 10 (both inclusive) is

A. 10

B. 100

C. 504

D. 2520

Answer: D



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15. The decimal expansion of the rational number $\frac{14587}{1250}$ will terminate after:

- A. one decimal place
- B. two decimal place
- C. three decimal place
- D. four decimal place

Answer: D



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16. If $\text{HCF}(a,b) = 45$ and $a \times b = 30375$ then
LCM (a,b) is

A. 1875

B. 1350

C. 625

D. 675

Answer: D



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17. Use Euclid's division Lemma to show that the cube of any positive integer is either of

the form $9m$, $9m + 1$ or, $9m + 8$ for some integer m .

A. $9q$

B. $9q+1$

C. $9q+3$

D. $9q+8$

Answer: C



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18. The number of 525 and 3000 are divisible by 3,5,15,25 and 75 what is the HCF of 525 and 3000?

A. 25

B. 125

C. 75

D. 15

Answer:



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19. IF HCF of two numbers is 1, the numbers are called relatively.....or.....

A. prime,co-prime

B. composite,prime

C. both a and b

D. none of these

Answer: A



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Objective Type Questions Fill In The Blanks

1.
$$\frac{2 + \sqrt{5}}{2 - \sqrt{5}}$$



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2. The HCF of two numbers is 27 and their LCM is 162. If one of numbers is 54, what is the other number ?



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3. If $a = (2^2 \times 3^3 \times 5^4)$ and $b = (2^3 \times 3^2 \times 5)$

then HCF (a, b) ?



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4. A decimal number $1.\overline{12}$ can be expressed in its simplest form as.



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5. Product of two numbers is 18144 and their HCF is 6, then their LCM is...



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6. The decimal expression of the rational number $\left(\frac{23}{2^2 \times 5}\right)$ will terminate after.....decimal place



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



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8. If a and b are positive integers then

$$\frac{HCF(a, b) \times LCM(a, b)}{ab} = \dots\dots\dots$$



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9.is the HCF of two consecutive even numbers



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10. If two positive integers P and q can be expressed as $p = a^2b^3$ and $q = a^4b$, a, b being prime numbers then LCM (p, q) is.....



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Objective Type Questions Very Short Answer Type Questions

1. The LCM of two numbers is 182 and their HCF is 13. If one of the numbers is 26, find the other.



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2. Given that $\text{HCF}(135, 225) = 45$ find the LCM
(135, 225)



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3. After how many decimal places will the
decimal representation of the rational
numbers $\frac{229}{2^2 \times 5^7}$ terminate?



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4. Find the value of : $(441)^{\frac{1}{2}}$



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



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



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7. Find a rational number between $\frac{1}{6}$ and $\frac{3}{5}$



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8. Write the numbers of zeroes in the end of a number whose prime factorization is

$$2^2 \times 5^3 \times 3^2 \times 17$$



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9. If the HCF of $(336, 54) = 6$, find the LCM $(336, 54)$



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10. Find a rational number between $\sqrt{2}$ and $\sqrt{3}$.



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11. Write one rational and one irrational number lying between 0.25 and 0.32



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12. Write the exponent of 3 in the prime factorization of 144.



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Short Question Sa I Type Questions

1. Check whether 12^n can end with the digit 0 for any natural number n .



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2. The product of the LCM and HCF of two numbers is 24. The difference of the two numbers is 2. Find the numbers



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3. Two alarm clocks ring their alarms at regular intervals of 72 seconds and 50 seconds if they first beep together at 12 noon, at what time will they beep again for the first time



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4. Find the HCF of 612 and 1314 using prime factorisation.



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5. Write the smallest number which is divisible by both 306 and 657



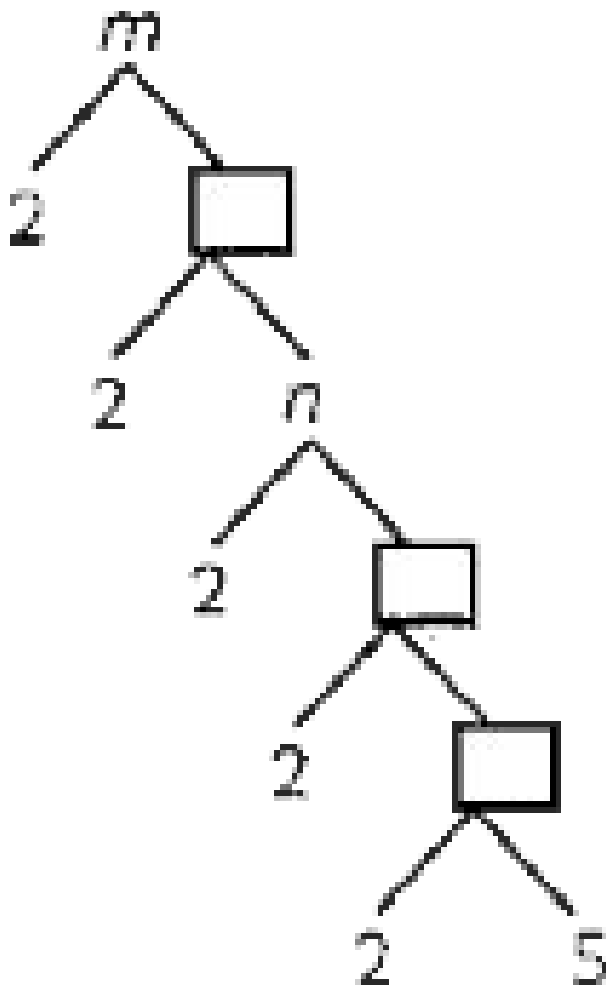
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6. A rational number in its decimal expansion is 327.7081. What can you say about the prime factors of q , when this number is expressed in the form $\frac{p}{q}$? Give reason



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7. In the adjoining factor tree, find the numbers m and n



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8. Without actually performing the long division, write the decimal expansion of

$$\frac{11725}{2^3 \times 5^4}$$



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9. Give an example of two irrationals whose product is rational.



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10. Using prime factorisation method, find the HCF and LCM of 210 and 175



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11. Prove that there is no natural number for which 4^n ends with the digit zero.



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12. If $\frac{2 + \sqrt{5}}{7 + \sqrt{3}} = a + b\sqrt{3} + c\sqrt{5} + d\sqrt{15}$,

then $a - b + c - d = ?$



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Short Question Sa li Type Questions

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



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



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



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4. Find HCF and LCM of 404 and 96 and verify that $HCF \times LCM = \text{Product of the two given numbers}$



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



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6. Three bells toll at intervals of 12 minutes ,15 minutes and 18 minutes respectively, if they

start tolling together, after what time will they
next toll together



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



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8. In a morning walk, three persons step off together. Their steps Measure 80 cm, 85 cm and 90 cm respectively. What is the minimum distance each should walk so that all can cover the same distance in complete steps?



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9. A merchant has 120 litres and 180 litres of two kinds of oil. He wants to sell oil by filling

the two kinds of oil of tins of equal volumes .

What is the greatest volume of such a tin



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10. Using prime factorisation find HCF and LCM of 18,45 and 60 check if $\text{HCF} \times \text{LCM} = \text{product of the number}$



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11. Show that the square of an odd positive integer is of the form $8q + 1$, for some integer q .



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



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



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14. Show that $5 + 2\sqrt{7}$ is an irrational number, where $\sqrt{7}$ is given to be an irrational number.



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Long Question Type Questions

1. Show that the square of any positive integer cannot be of the form $5q+2$ or $5q+3$ for some integer q .



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2. Prove that one of every three consecutive positive integers is divisible by 3.



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3. Prove that \sqrt{n} is not a rational number. if n is not a perfect square.



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4. 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) $0.\overline{16}$



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5. the decimal expansion of some real number are given below. In each case, decide whether they are rational or not. If they are rational, write in the form $\frac{p}{q}$ what can you say about the prime factors of q

$0.\overline{16}$



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