



MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

REAL NUMBERS AND LCM AND HCF

Example

1. Find the successor of the number -10 .

A. -11

B. 10

C. 9

D. -9

Answer: D



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2. Find the predecessor of -7 .



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3. Find two rational numbers between $\frac{3}{4}$ and $\frac{2}{7}$.



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4. Express $12.0\bar{5}$ as rational number.

A. $\frac{1193}{99}$

B. $\frac{1191}{98}$

C. $\frac{1198}{93}$

D. $\frac{1209}{99}$

Answer: $\frac{1193}{99}$

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5. Express $0.2\overline{25}$ as a rational number.

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6. Find the value of $(0.424242\dots) - (0.353535\dots)$.

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7. Verify wheter 223 is a prime number or not .

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8. From the set $\{2, 3, 4, 5, 6, 7, 8, 9\}$, how many pairs of co-primes can be formed?

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9. Roshan wanted to type the first 190 whole numbers. Find the number of times he had to press the numbered keys.

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10. Find the units digit of 8^{25} .

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11. If the number 8764×5 is divisible by 9, then find the least possible value of x , where x is a two-digit number.

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12. Find the smallest six-digit number which when divided by 15 and 6 leaves a remainder of 2 in each case.

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13. Find the GCD of 72 and 60

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14. (a) Find the GCD of 24 and 36.

(b) Find the GCD of 12, 18 and 24.

A. 1

B.

C.

D.

Answer:

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15. Find the GCD of 64 and 56.

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16. Find the GCD of 25, 45 and 75.

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17. Find the LCM of 24b and 36.

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18. Find the LCM of 32 and 24.

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19. Find the LCM of 12, 48 and 36.

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20. Find the LCM of 144 and 156.

$$\begin{array}{l|l} 2 & 144, 156 \\ \hline 2 & 72, 78 \\ \hline 3 & 36, 39 \\ \hline & 12, 13 \end{array}$$

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21. Find the LCM of 12, 18 and 24.



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22. Find the HCF and LCM of $\frac{4}{5}$, $\frac{2}{5}$ and $\frac{3}{4}$



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Test Your Concepts Very Short Type

1. The natural number other than 1 which is not prime is ___ number.



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2. All odd numbers are prime numbers. Is this statement true or false?



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3. What is the least natural number?

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4. What is the number which has at least three factors called ?

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5. What is the sum of ten odd numbers and eleven even numbers?

(even/odd)

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6. The product of two positive integers and eight negative integers is a

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7. Two relatively prime numbers need not be prime numbers. Is this statement true?

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8. The greatest common factor of relatively prime numbers is

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9. What is the least natural number?

A. 1

B. 0

C. -1

D. not defined

Answer: A



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10. What is the absolute value of -10?

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11. Every recurring decimal is a ___ number.

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12. How many rational numbers exist between any two rational numbers ?

A. 0

B. 10

C. infinite numbers

D. 199100

Answer: Infinite rational number exist between any two rational number.

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13. Is π a rational or an irrational numbers?

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14. Every rational number can be represented by some point on the number line, is this statement true or false?

A. true

B. false

C.

D.

Answer: True



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15. What is the multiplicative inverse of a , where $a \neq 0$?



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16. Prime numbers differing by 2 are called ____



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17. If $23457a68$ divisible by 9, then the least value of a is ____



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18. If x is divisible by both 3 and 5, then x is divisible by 15. Is this statement true?



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19. Pairs of numbers of the form $(6k - 1)$ and $(6k + 1)$ are twin primes. Is this statement true ?

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20. If $a/b, b/c$ then the GCD of a, b, c is _____

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21. If 36 is exactly divisible by a , then the GCD of 36 and a is _____

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22. The LCM of a and b is x . what is the LCM of ma and mb ?

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23. Let a and b be two numbers. Then $a \times b =$ (LCM of a and b)
 \times (_____).

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24. What is the GCD of ma and mb , if the GCD of a and b is x ?

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25. In the prime factorisation method of finding LCM, LCM is given by
product of _____ all the factors.

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26. Let a and b two numbers p be their LCM and q be their GCD. Then q
in terms of LCM is _____



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$$27. \frac{\text{HCF of given fraction}}{\text{LCM of given fractions}} \\ = \frac{\text{HCF of numerators} \times \text{HCF of denominators}}{\text{LCM of denominators} \times \text{-----}}$$



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28. If $x = a^2 \cdot b^3$, where a and b are prime factors of x , then numbers of factors of x is _____



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29. The units digit of the number 9^{26} is _____



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30. $\frac{\text{Divided - Remainder}}{\text{Divisor}} = \text{-----}$

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Short Answer Type

1. How many prime number are there between 1 and 50 ?

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2. Which of the following numbers are rational? Also, identify the irrational numbers.

(a) $0 - 1 + 1$

(d) $\frac{3}{2}$

(e) $\frac{-3}{2}$

(f) $\sqrt{2}$

(g) $-\sqrt{2}$

(h) $\sqrt{2} \times \sqrt{8}$

(i) $-\sqrt{2} \times \sqrt{8}$

(j) $(4 - \sqrt{2}) \left(2 + \frac{1}{s} \text{ger}(2) \right)$

(k) 9990

(l) 14^{-28}



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3. Find the greatest and the least of the following rational numbers.

(a) $-12, 8, -3, 12, -8, 3, 0$

(b) $\frac{2}{3}, \frac{3}{5}, \frac{2}{5}, \frac{3}{4}, \frac{3}{8}$



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4. Represent the following numbers on the number line.

(a) $\frac{-7}{4}$ (b) 0 (c) -1.8 (d) $\frac{3}{2}$ (e) $\frac{-5}{6}$ (f) $\left(1\frac{1}{2}\right)$ (g) $3.25 - 4.75 + \frac{3}{4}$



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5. Obtain (i) one rational number and (ii) three rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$.

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6. Which of the following numbers are prime ? Why/ why not ?

(a)7(b)1(c)2(d)47(e)97(f)2011(g)111111

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7. Identify the composite numbers from the following.

(a)1(b)2(c) $4^0 + 13$ (d)6027(e)331(f)79

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8. Which of the following numbers are divisible by 3?

(a)

121212(b)505550(c)4132(d)453052(e)97621(f)182391(g)165651(h)168681

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9. Find the set of factors of 256.

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10. Find the GCD of 156 and 936 using factors method.

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11. Find the LCM of 1296 and 1728 using synthetic division method.

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12. (a) Find the HCF of $\frac{2}{5}$, $\frac{12}{5}$ and $\frac{3}{4}$



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13. Reduce $\frac{6912}{6561}$ to its lowest terms.



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14. The HCF of two numbers is 12 and their LCM is 144. if one of them is 36, find the other.



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15. Find the greatest possible length of the rope which can be used to measure two sticks of lengths 24 m and 18 m.



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1. Find the greatest number which divides 219 and 486 leaving remainder 3 and 2 respectively.

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2. Find the number of factors of 1498176 and also their sum.

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3. A fruit vendor has 260 mangoes , 292 oranges and 220 apples. He sells each of these fruits in a package containing the same number of fruits in a package containing the same number of fruits of the same kind and has found that 4 apples, 4 oranges and 4 mangoes are left out.

Find the greatest possible size of the package. where size of the package is defined as the number of fruits in each package.

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4. A fruit vendor has 260 mangoes , 292 oranges and 220 apples. He cells each of these fruits in a package containing the same number of fruits in a package containing the same number of fruits of the same kind and has found that 4 apples, 4 oranges and 4 mangoes are left out.

Find the minimum number of fruit packages.



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5. A fruit vendor has 260 mangoes , 292 oranges and 220 apples. He cells each of these fruits in a package containing the same number of fruits in a package containing the same number of fruits of the same kind and has found that 4 apples, 4 oranges and 4 mangoes are left out.

If he sells each package of mangoes at ₹30, find the total selling price.



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Concept Application Level 1

1. What is the digit in the tens in the product of the first 35 even natural numbers ?

A. 6

B. 2

C. 0

D. 5

Answer: C



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2. 73412130 is exactly divisible by

A. 3

B. 11

C. 7

D. Both (a) and (b)

Answer: D

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3. The LCM of $\frac{1}{4}$ and $\frac{2}{5}$ is

A. 1

B. $\frac{1}{10}$

C. 2

D. $\frac{1}{20}$

Answer: C

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4. The multiplicative inverse of $(x + 1) + \frac{1}{x - 1}$ is

A. $\frac{1}{x + 1} + (x - 1)$

B. $(x - 1) - \frac{1}{x + 1}$

C. $\frac{x - 1}{x^2}$

D. $\frac{x + 1}{x^2}$

Answer: C



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5. Find the unit's digit in the product of the first 50 odd natural numbers.

A. 0

B. 5

C. 7

D. None of these

Answer: B



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6. How many composite numbers are in between 50 and 100 (inclusive of 50 and 100)?

A. 39

B. 40

C. 41

D. 42

Answer: C



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7. There are 20 balls. The balls are numbered consecutively starting from any one of the numbers from 1 to 20. For any case, the sum of the numbers on all the balls will be a/an

- A. Odd number
- B. Even number
- C. Prime number
- D. Cannot say

Answer: B



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8. Pick up the positive integers from the following numbers : (A) 0

(B) $(-3) \times (-3)$

(C) $3 \times (-3)$

(D) 3×3

A. B

B. A and B

C. D

D. Band D

Answer: D



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9. Find the absolute values of $x - 2$, where $x < 2$.

A. $x - 1$

B. $x + 2$

C. $2 - x$

D. $2x$

Answer: C



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10. Which pair of numbers below are twin primes ?

A. 8 and 9

B. 2 and 3

C. 3 and 7

D. 41 and 43

Answer: D



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11. Which of the following values are even ?

(A) $21 + 18 + 9 + 2 + 19$

(B) $34 \times 28 \times 37 \times 94 \times 12712$

(C) $33 \times 35 \times 37 \times 39 \times 41 \times 43$

(D) $11 \times 11 \times 11 \times 11 \times 11 \times \dots$

(E) 1^{10}

(F) $39 - 24$

A. A,B,C

B. D,E,F

C. B

D. A,B,D,E

Answer: C



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12. Express the following rational numbers as decimals and identify which of them are terminating ?

(A) $\frac{1}{2}$

(B) $-\frac{2}{3}$

(C) $\frac{15}{5}$

(D) $\frac{5}{6}$

(E) $\frac{1}{7}(F)17(5)/(6)(G)3(1)/(2)+8(1)/(4)(H)2^{-4}xx3` .$

A. (A) and (B)

B. (C) and (D)

C. (A), (C) and (G)

D. (A), (C), (G) and (H)

Answer: D



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13. If the numbers $a - b$ and $a + b$ are twin primes then a and b are necessarily

A. Twin primes

B. Co-primes

C. Cannot say

D. None of these

Answer: B



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14. Which of the following statements are / is true ?

A. The product of two irrational numbers is always irrational.

B. The sum of two irrational numbers is always irrational.

C. Both (a) and (b)

D. None of these

Answer: D



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15. The absolute value of $12 \times (-3) + 12 - 15$ is

A. -39

B. -41

C. 39

D. 41

Answer: C



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16. In the set of rational numbers, multiplicative identify is _____ and the additive identity is _____.

A. $0,1$

B. $1,1$

C. $0,0$

D. $1,0$

Answer: D



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17. If $a, b \in P$ and $a \cdot b, \in P$. Then P is _____ under the operation \cdot .

- A. Associative
- B. Commutative
- C. Closed
- D. Distributive

Answer: C



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18. What is the number in the units place of $(763)^{84}$?

- A. 1

B. 3

C. 7

D. 9

Answer: A



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19. The HCF of all the natural numbers from 200 to 478 is _____

A. 2

B. 1

C. 478

D. 3

Answer: B



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20. Find the greatest number that divides 59 and 54 leaving remainders 3 and 5 respectively.

A. 3

B. 7

C. 8

D. 5

Answer: B



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21. Find the HCF of the first 100 natural numbers.

A. 2

B. 7

C. 1

D. None of these

Answer: C



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22. Find the units digit in the expansion of $(44)^{44} + (55)^{55} + (88)^{88}$.

A. 7

B. 5

C. 4

D. 3

Answer: A



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23. Find the least number exactly divisible by 36 and 24.

A. 144

B. 72

C. 64

D. 324

Answer: B



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24. Find the digit in the units place of $(676)^{99}$.

A. 9

B. 2

C. 4

D. 6

Answer: D





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25. The LCM of $\frac{5}{12}$, $\frac{6}{5}$, $\frac{3}{2}$ and $\frac{4}{17}$ is

A. 60

B. $\frac{1}{60}$

C. 180

D. None of these

Answer: A



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26. Find the number of factors of 1080.

A. 32

B. 28

C. 24

D. 36

Answer: A



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27. If p, q and r are prime numbers such that $r = q + 2$ and $q = p + 2$, then the number of triples of the form (p, q, r) is

A. 0

B. 1

C. 2

D. 3

Answer: B



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28. If $a \in \mathbb{N}$ and $1 \leq a \leq 20$, then find the number of prime numbers in the form of $5a + 1$.

A. 4

B. 5

C. 6

D. 7

Answer: C



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29. The GCD of two numbers is 128 and their LCM is 256. Then their product is

A. 38028

B. 36868

C. 32768

D. Data inconsistent

Answer: C



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30. The absolute value of $25 - (25 + 10) + 25 \div 125 \times 25$ is

A. -5

B. 3

C. 15

D. 5

Answer: D



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31. Find the LCM of 12, 48 and 36.

The following are the sequential order from the first to last.

(A) $12 = 2^2 \times 3^1$, $48 = 2^4 \times 3^1$, $36 = 2^2 \times 3^2$

(B) $LCM = 2^4 \times 3^2 = 16 \times 9 = 144$

(C) Resolving the given into product of prime factors.

A. ACB

B. ABC

C. CBA

D. CAB

Answer: D



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32. Find the GCD of the fractions $\frac{3}{5}$, $\frac{4}{7}$ and $\frac{7}{10}$. The following are the steps involved in solving the above problem. Arrange them in the sequential order.

(A) We have, the GCD of fractions $= \frac{\text{GCD of numerators}}{\text{LCM of denominators}}$

(B) The required GCD $= \frac{1}{70}$

(C) The GCD of 3, 4, 7, is 1. The LCM of 5, 7 and 10 is 70.

A. ACB

B. CBA

C. BAC

D. BCA

Answer: A



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33. Find the sum of $3.\bar{2}$ and $5.\bar{4}$.

A. $\frac{78}{3}$

B. $\frac{58}{3}$

C. $\frac{58}{9}$

D. $\frac{78}{9}$

Answer: D



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Level 2

1. The greatest five digit number exactly divisible by 9 and 13 is

A. 99945

B. 99918

C. 99964

D. 99972

Answer: B



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2. What is the multiplicative inverse of $a - \frac{1}{a}$

A. $a + \frac{1}{a}$

B. $\frac{1}{a} - a$

C. $\frac{a}{a - 1}$

D. $\frac{1}{a^2 - 1}$

Answer: D



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3. If the number $2345p60q$ is exactly divisible by 3 and 5, then the maximum value of $p + q$ is

A. 12

B. 13

C. 14

D. 15

Answer: B



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4. The absolute value of $|x - 2| + |x + 2|$, if $0 < x < 2$ is

A. $2x$

B. 4

C. $2(x + 1)$

D.

Answer: B



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5. If $1 \leq k \leq 25$, how many prime numbers are there which are of the form $6k + 1$?

A. 15

B. 16

C. 17

D. 18

Answer: B

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6. If a, b, c and d are four positive real numbers such that sum of a, b and c is even the sum of b, c and d is odd, then $a^2 - d^2$ is necessarily

A. odd

B. Even

C. Prime

D. Either (a) or (b)

Answer: A

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7. Mukesh bought 3 apples, 5 bananas and 7 custard apples for a certain amount (which is even). The cost of apples, bananas and custard apples could be(in Rs.)

A. 5,7,9

B. 9,8,6

C. 2,4,5

D. 9,10,11

Answer: D

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8. In a class there are 72 boys and 64 girls. If the class is to be divided into least number of groups such that each group contains either only boys or only girls, then how many groups will be formed ?

A. 17

B. 34

C. 24

D. None of these

Answer: A



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9. The HCF of two numbers, obtained in three steps of division, is 7 and the first 3 quotients are ,4 and 6 respectively. Find the numbers

A. 175392

B. 189392

C. 168385

D. None of these

Answer: A



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10. Find the greatest four digit number which when divided by 18 and 12 leaves a remainder of 4 in each case

A. 9976

B. 9940

C. 9904

D. 9868

Answer: A



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11. If m is prime, n is a composite number and $m + n = 240$ also their LCM is 4199. Find m and n .

A. 13227

B. 17223

C. 19221

D. 23217

Answer: C



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12. If the seven digit number $4567X75$ is divisible by 15 then find the least possible value of X.

A. 2

B. 1

C. 0

D. 3

Answer: A

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13. The absolute value of $|4 - x| + |x - 4|$, if $0 > x > 4$ is

A. 0

B. $2x$

C. 8

D. $2(4 - x)$

Answer: D



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14. Find the maximum possible length of the rope which can measure 48 m and 36 m.

The following are the steps involved in solving the above problem.

Arrange them in the sequential order.

(A) the greatest possible length is the HCF of 48 m and 36m.

(B) The HCF of 48 and 36 $= 2^2 \times 3 = 12$.

(C) $48 = 2^4 \times 3$, $36 = 2^2 \times 3^2$.

(D) The greatest possible length of the rope $= 12m$.

A. ABCD

B. ACBD

C. ADBC

D. BACD

Answer: B

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15. Three bells toll at intervals of 12 min, 24 min and 9 min respectively. If they toll together at 11.00 a.m. then find the time at which they toll together again for the first time. The following are the steps involved in solving the above problem. Arrange them in the sequential order. (A) We know that the three bells toll together at the multiples of LCM of 12 min, 24 min and 9 min. (B) After 11 a.m. they toll together at (11 a.m. + 72 min) i.e., 12.12 p.m. (C) The LCM of 12, 24 and 9 is 72. (D) Therefore, all the three bells toll together for every 72 min.

A. ABCD

B. ACDB

C. DBAC

D. DABC

Answer: B



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16. The unit's digit of the product of the first 100 even natural numbers is _____

A. 0

B. 2

C. 4

D. 8

Answer: A



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17. The LCM of 100 and 101 is ____

- A. 101000
- B. 10001
- C. 10101
- D. None of these

Answer: A



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18. The HCF of 100 and 101 is ____

- A. 1
- B. 7
- C. 37
- D. None of these

Answer: A



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Level 3

1. Rahul wanted to type the first 180 natural numbers. Find the number of times he had to press the numbered keys.

A. 384

B. 433

C. 416

D. 448

Answer: B



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1. A note book is made up of sheets folded in the middle and stapled. Each sheet form two leaves i.e., four pages. On removing some papers of the first half and second half of the book, Joe found the number of the leaves, in the first case as odd and in the second case as even. If the sum of the numbers of the pages on the last leaf of the book is 63, then what could be the maximum possible sum of the numbers on the pages of leaves that were left in the book.

A. 435

B. 420

C. 451

D. 471

Answer: C



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1. Two groups consisting of 108 and 156 students participate in sports meet. In how many rooms can all these students be accommodated at the minimum if all the rooms should have equal number of students and no two students in a room should be from different groups ?

A. 22

B. 20

C. 19

D. 13

Answer: A



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1. Raj wanted to type the first 200 natural numbers, how many times does he have to press the keys

A. 400

B. 365

C. 492

D. 489

Answer: C



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Level 7

1. If $5 \leq 4K + 1 \leq 29$, then find the maximum number of co-primes formed from the possible values of K ?

A. 15

B. 11

C. 13

D. 17

Answer: D



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Level 8

1. The GCD of two numbers is 4 and their LCM is 400. How many pairs of values can the numbers assume?

A. 1

B. 2

C. 3

D. 4

Answer: B



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Level 9

1. The LCM of two numbers is 1024 and one of them is a prime numbers . Find their GCD.

A. 3

B. 2

C. 5

D. 7

Answer: B



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1. Two groups consisting of 234 boys and 286 girls are to participate in a drill. In how many minimum rows can all the students be divided so that any given row either consists of only boys or only girls ?

A. 20

B. 22

C. 24

D. 18

Answer: A



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1. The GCD of two numbers is 17 and their LCM is 765. How many pairs of values can the numbers assume?

A. 1

B. 2

C. 3

D. 4

Answer: B



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