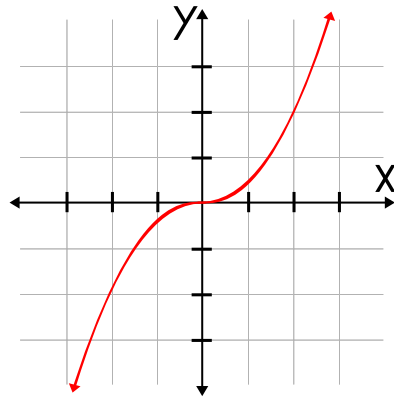


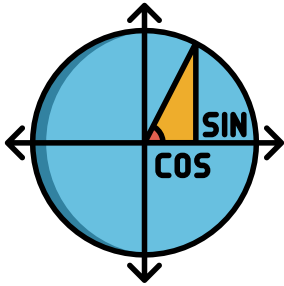
6

=

π



7



Empower Your Future with

x^2

Math

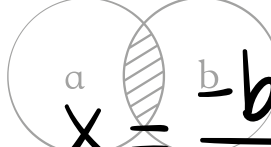
$F(x)$

Class 10

Real Numbers

$\sqrt[n]{a}$





$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a^2 + b^2 = c^2$$

3

+

x



REAL NUMBERS

OBJECTIVE TYPE

Question No: 1

The H.C.F. and the L.C.M. of 12, 21, 15 respectively are:

- (a) 3,140
- (b) 12,420
- (c) 3,420
- (d) 420,3

Question No: 2

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

- (a) an integer
- (b) a natural number
- (c) an odd integer
- (d) an even integer

Question No: 3

For some integer m , every even integer is of the form:

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

Question No: 4

π is:

- (a) an integer
- (b) an irrational number
- (c) a rational number
- (d) none of the above

Question No: 5

If the H.C.F. of two numbers is 1, then the two numbers are called:

- (a) composite
- (b) twin primes
- (c) co-primes
- (d) none of these

Question No: 6

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

- (a) 13
- (b) 65
- (c) 875
- (d) 1750

Question No: 7

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

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

Question No: 8

The H.C.F. of smallest prime number and the smallest composite number is

- (a) 1
- (b) 2

- (c) 4
(d) none of these

Question No: 9

Which of the following is the smallest composite number?

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

Question No: 10

H.C.F. of 2 numbers is 113 , and their L.C.M. is 56952 . If one number is 904 , then the other number is:

- (a) 7911
(b) 7119
(c) 7791
(d) 7971

Question No: 11

The H.C.F. $(a, b) = 2$ and L.C.M. $(a, b) = 27$. What is the value $a \times b$?

- (a) 44
(b) 54
(c) 56
(d) 68

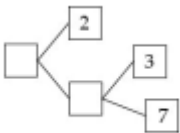
Question No: 12

The H.C.F. of $3^3 \times 5$ and $3^2 \times 5^2$ is:

- (a) 135
(b) 15
(c) 225
(d) 45

Question No: 13

Complete the missing entries in the following factor tree:



- (a) 42 and 21
(b) 24 and 12
(c) 7 and 3
(d) 84 and 42

Question No: 14

For what least value of n natural number $(24)^n$ is divisible by 8?

- (a) 1
(b) -1
(c) 0
(d) none of these

Question No: 15

The H.C.F. of 306 and 1314 is:

- (a) 15
(b) 16
(c) 17
(d) 18



ASSERT & REASONING

Question No: 16

Mark the option which is most suitable:

Assertion: $-1, 0, 2, \frac{-4}{3}$ all are example of rational numbers.

Reason: All integers and fractions are rational numbers.

- (a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
- (b) The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
- (c) Assertion is true but the Reason is false.
- (d) Assertion is false but the Reason is true.

Question No: 17

Mark the option which is most suitable:

Assertion: $\frac{123}{630}$ is a terminating decimal.

Reason: The rational number $\frac{p}{q}$ is a terminating decimal, if $q = 2^m \times 5^n$) for some whole numbers m and n .

- (a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
- (b) The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
- (c) Assertion is true but the Reason is false.
- (d) Assertion is false but the Reason is true.

COMPREHENSION TYPE

Question No: 18

Suresh planned a rennovation of his house. He want to renovate ceiling of his room by putting square shape tiles on it. Ceiling of the room is 8 m25 cm long and 6 m75 cm broad.

- (i) Find the dimensions of each tiles.
- (ii) Find the number of tiles required for the project.

Question No: 19

Sandhya on the very first day of her job in a bank, noticed that there are six bells which keep on tolling at regular intervals. She noticed that toll of their intervals are 2, 4, 6, 8, 10, 12 minutes respectively. If all the six bells commence tolling together, at 10 a.m., then answer the following questions:

Based on the given information, answer the following questions:

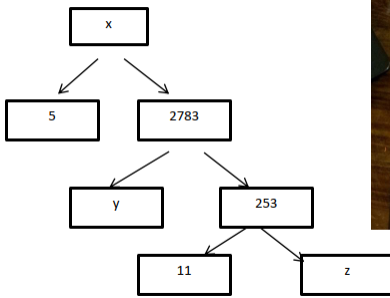
- (i) At what time will they again toll together?
- (ii) How many times these bells will toll together during the working hours of Sandhya's job, if Sandhya works for 8 hours in a day?

CASE STUDY QUESTIONS

Question No: 20

A Mathematics Exhibition is being conducted in your School and one of your friends is making a model of a factor tree. He has some difficulty and asks for your help in completing a quiz for the audience.

Observe the following factor tree and answer the following:



- What will be the value of x ?
 - 15005
 - 13915
 - 56920
 - 17429
- What will be the value of y ?
 - 23
 - 22
 - 11
 - 19
- What will be the value of z ?
 - 22
 - 23
 - 17
 - 19
- According to Fundamental Theorem of Arithmetic 13915 is a
 - Composite number
 - Prime number
 - Neither prime nor composite
 - Even number
- The prime factorisation of 13915 is
 - $5 \times 11^3 \times 13^2$
 - $5 \times 11^3 \times 23^2$
 - $5 \times 11^2 \times 23$
 - $5 \times 11^2 \times 13^2$

Question No: 21

Vedika wants to organize her birthday party. She was happy on her birthday. She is very health conscious. So decided to serve fruits only to the guests. She has 36 apples, 60 bananas at home and decided to serve them. She want to distribute the fruits among guests. She does not want to discriminate among guests so she decided to distribute the fruits equally among all. (i) How many maximum guests Vedika can invite?

- 12
 - 120
 - 6
 - 180
- (ii) How many apples and bananas will each guests get?
- 3 apples 5 bananas
 - 5 apples 3 bananas
 - 2 apples 4 bananas
 - 4 apples 2 bananas
- (iii) Vedika decide to add 42 mangoes. In this case how many maximum guests Vedika invite?
- 12
 - 120

- (c) 6
 (d) 180
 (iv) If Vedika decide to add 3 more mangoes and instead 6 apples, in this case how many maximum guests Vedika can invite?
 (a) 12
 (b) 30
 (c) 15
 (d) 24
 (v) How many total fruits will each guest get from case (iii)?
 (a) 36
 (c) 17
 (d) 23

Question No: 22

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.



- 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
- If the product of two positive integers is equal to the product of their HCF and LCM is true then, the $\text{HCF}(32, 36)$ is
 a) 2
 b) 4
 c) 6
 d) 8
- 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) $2^0 \times 3^0$
- $7 \times 11 \times 13 \times 15 + 15$ is a
 a) Prime number
 b) Composite number
 c) Neither prime nor composite
 d) None of the above
- If p and q are positive integers such that $p = ab^2$ and $q = a^2b$, where a, b are prime numbers, then the $\text{LCM}(p, q)$ is
 a) ab
 b) a^2b^2

c) a^3b^2

d) a^3b^3

Question No: 23

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.



1. In each room the same number of participants are to be seated and all of them being in the same subject, hence maximum number participants that can accommodated in each room are

a) 14

b) 12

c) 16

d) 18

2. What is the minimum number of rooms required during the event?

a) 11

b) 31

c) 41

d) 21

3. The LCM of 60,84 and 108 is

a) 3780

b) 3680

c) 4780

d) 4680

4. The product of HCF and LCM of 60,84 and 108 is

a) 55360

b) 35360

c) 45500

d) 45360

5. 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) $2^2 \times 3^3$

VERY SHORT ANSWER TYPE**Question No: 24**

Atul, Ravi and Tarun go for a morning walk. They step off together and their steps measure 40 cm, 42 cm and 45 cm, respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?

Question No: 25

If H.C.F. (336, 54) = 6, find L.C.M. (336, 54).

Question No: 26

50 people work in a cooperative society. All of them use their own conveyance for travelling. 20 people use their scooters, 12 go by their cars, 16 go by public transport and 2 use bicycle. Find H.C.F. of 20, 16, 12 and 2.

Question No: 27

There is a circular path around a sports field, Priya takes 18 min. to drive one round of the field,



while Ravish 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?

Question No: 28

Explain why $(17 \times 5 \times 11 \times 3 \times 2 + 2 \times 11)$ is a composite number?

Question No: 29

Express 23150 as product of its prime factors. Is it unique?

Question No: 30

Two positive integers a and b can be written as $a = x^3y^2$ and $b = xy^3$. x, y are prime numbers. Find L.C.M. (a, b) .

Question No: 31

Find the largest number which divides 70 and 125 leaving remainder 5 and 8 respectively.

Question No: 32

96 defective pens are accidentally mixed with 105 good pens. What is L.C.M. of 96 and 105 ?

Question No: 33

Write whether $\frac{2\sqrt{45+3\sqrt{220}}}{\sqrt{5}}$ on simplification gives a rational or an irrational number.

SHORT ANSWER TYPE

Question No: 34

Find L.C.M. and H.C.F. of 3930 and 1800 by prime factorization method.

Question No: 35

The length, breadth and height of a room are 8 m50 cm, 6 m 25 cm and 4 m75 cm respectively. Find the length of the longest rod that can measure the dimensions of the room exactly.

Question No: 36

A dealer has 60I of blue paint, 84I of violet paint and 132I of white paint. What would be the capacity of the cans that he would to store all the three types of paint in equal quantities? How many such cans will there be ?

Question No: 37

Find the H.C.F. of 1260 and 7344 using Euclid's algorithm.

Question No: 38

Three alarm clocks ring at intervals of 4,12 and 20 minutes respectively. If they start ringing together, after how much time will they next ring together?

Question No: 39

Three sets of English, Hindi and Sociology books dealing with cleanliness have to stacked in such a way that all the books are stored topic-wise and height of each stack is the same. The number of English books is 96, number of Hindi books is 240 and the number of Sociology books is 336. Assuming that the books are of same thickness, determine the number of stacks of English, Hindi and Sociology books.

Question No: 40

Find the H.C.F. of $x^2 + 3x - 10$ and $x^3 - 8x$.

Question No: 41

In a seminar on the topic 'liberty and equality' the numbers of participants from Hindi, Social Science and English department are 60,84 and 108 respectively. 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.

Question No: 42

In a class, there are 16 boys and 18 girls. Find the number of pens required to distribute them equally among the boys and the girls.

**Question No: 43**

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

LONG ANSWER TYPE**Question No: 44**

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

Question No: 45

Find H.C.F. of numbers 134791, 6341 and 6339 by Euclid's division algorithm.

Question No: 46

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

Question No: 47

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

Question No: 48

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