

Whole Numbers

PAGE NO 3.4:

Question 1:

Write down the smallest natural number.

ANSWER:

The smallest natural number is 1.

PAGE NO 3.4:

Question 2:

Write down the smallest whole number.

ANSWER:

The smallest whole number is 0 (zero).

PAGE NO 3.4:

Question 3:

Write down, if possible, the largest natural number.

ANSWER:

We know that every natural number has a successor. Thus, there is no largest natural number.

PAGE NO 3.4:

Question 4:

Write down, if possible, the largest whole number.

ANSWER:

We know that every whole number has a successor. Thus, there is no largest whole number.

PAGE NO 3.4:

Question 5:

Are all natural numbers also whole numbers?

ANSWER:

Yes, all natural numbers are whole numbers.

PAGE NO 3.4:**Question 6:**

Are all whole numbers also natural numbers?

ANSWER:

No, all whole numbers are not natural numbers because 0 is a whole number but not a natural number.

PAGE NO 3.4:**Question 7:**

Give successor of each of the whole numbers?

- (i) 1000909
- (ii) 2340900
- (iii) 7039999

ANSWER:

Given Number	Successor
(i) 1,000,909	$1,000,909 + 1 = 1,000,910$
(ii) 2,340,900	$2,340,900 + 1 = 2,340,901$
(iii) 7,039,999	$7,039,999 + 1 = 7,040,000$

PAGE NO 3.4:**Question 8:**

Write down the predecessor of each of the following whole numbers:

- (i) 10000
- (ii) 807000
- (iii) 7005000

ANSWER:

	Given Number	Predecessor
(i)	10,000	$10,000 - 1 = 9,999$
(ii)	807,000	$807,000 - 1 = 806,999$
(iii)	7,005,000	$7,005,000 - 1 = 7,004,999$

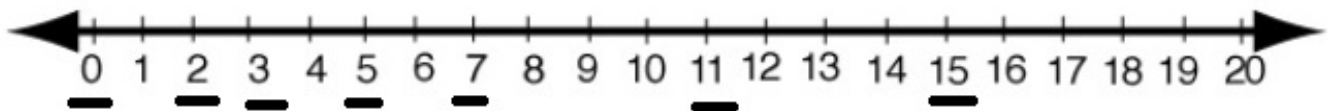
PAGE NO 3.4:

Question 9:

Represent the following numbers on the number line:

2,0,3,5,7,11,15

ANSWER:



PAGE NO 3.4:

Question 10:

How many whole numbers are there between 21 and 61?

ANSWER:

The whole numbers between 21 and 61 are 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 and 60.

Thus, there are 39 whole numbers between 21 and 61.

PAGE NO 3.4:

Question 11:

Fill in the blanks with the appropriate symbol $<$ or $>$:

- (i) $25 \dots 205$
- (ii) $170 \dots 107$
- (iii) $415 \dots 514$
- (iv) $10001 \dots 100001$
- (v) $2300014 \dots 2300041$

ANSWER:

We have:

(i) $25 < 205$

(ii) $170 > 107$

(iii) $415 < 514$

(iv) $10001 < 100001$

(v) $2300014 < 2300041$

PAGE NO 3.5:**Question 12:**

Arrange the following numbers in descending order:

925, 786, 1100, 141, 325, 886, 0, 270

ANSWER:

Numbers in descending order:

1100, 925, 886, 786, 325, 270, 141, 0

PAGE NO 3.5:**Question 13:**

Write the largest number of 6 digits and the smallest number of 7 digits. Which one of these two is larger and by how much?

ANSWER:

Largest six-digit number = 999,999

Smallest seven-digit number = 1,000,000

Thus, the smallest seven-digit number is larger than the largest six-digit number.

Again,

Difference between these two numbers = $1,000,000 - 999,999 = 1$

Hence, the smallest seven-digit number is larger than the largest six-digit number by 1.

PAGE NO 3.5:

Question 14:

Write down three consecutive whole numbers just preceding 8510001.

ANSWER:

We have:

$$\text{First number} = 8,510,001 - 1 = 8,510,000$$

$$\text{Second number} = 8,510,000 - 1 = 8,509,999$$

$$\text{Third number} = 8,509,999 - 1 = 8,509,998$$

Hence, the three consecutive whole numbers just preceding 8,510,001 are 8,510,000, 8,509,999 and 85,09,998.

PAGE NO 3.5:

Question 15:

Write down the next three consecutive whole numbers starting from 4009998.

ANSWER:

We have:

$$\text{First number} = 4,009,998 + 1 = 4,009,999$$

$$\text{Second number} = 4,009,999 + 1 = 4,010,000$$

$$\text{Third number} = 4,010,000 + 1 = 4,010,001$$

Hence, the next three consecutive whole numbers starting from 4,009,998 will be 4,009,999, 4,010,000 and 4,010,001.

PAGE NO 3.5:

Question 16:

Give arguments in support of the statement that there does not exist the largest natural number.

ANSWER:

We know that every natural number has a successor. Therefore, the largest natural number does not exist.

PAGE NO 3.5:

Question 17:

Which of the following statements are true and which are false?

- (i) Every whole number has its successor.
- (ii) Every whole number has its predecessor.
- (iii) 0 is the smallest natural number.
- (iv) 1 is the smallest whole number.
- (v) 0 is less than every natural number.
- (vi) Between any two whole numbers there is a whole number.
- (vii) Between any two non-consecutive whole numbers there is a whole number.
- (viii) The smallest 5-digit number is the successor of the largest 4 digit number
- (ix) Of the given two natural numbers, the one having more digits is greater.
- (x) The predecessor of a two digit number cannot be a single digit number.
- (xi) If a and b are natural numbers and $a < b$, then there is a natural number c such that $a < b < c$.
- (xii) If a and b are whole numbers and $a < b$, then $a+1 < b+1$.
- (xiii) The whole number 1 has 0 as predecessor.
- (xiv) The natural number 1 has no predecessor.

ANSWER:

- (i) True
The successor of every whole number can be found by adding 1.
- (ii) False
Zero (0) is a whole number whose predecessor (-1) is not a whole number.
- (iii) False
1 is the smallest natural number.
- (iv) False
Zero (0) is the smallest whole number.
- (v) True
The smallest natural number is 1, so zero (0) is less than every natural number.
- (vi) False
There is no whole number between two consecutive whole numbers.
- (vii) True
- (viii) True
The smallest five-digit number = 10,000
The largest four-digit number = 9,999
Difference = $10,000 - 9,999 = 1$
Because the difference is 1, 10,000 is the successor of 9,999.
- (ix) True
- (x) False
10 is a two-digit number whose predecessor is 9, which is a one-digit number.
- (xi) False
If a and b are consecutive natural numbers, then there cannot be any natural number c in between a and b .
- (xii) True
- (xiii) True

(xiv) True

The predecessor of natural number 1 is 0, which is not a natural number.

PAGE NO 3.5:

Question 1:

The smallest natural number is

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

ANSWER:

- (b) 1

PAGE NO 3.5:

Question 2:

The smallest whole number is

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

ANSWER:

- (b) 0

PAGE NO 3.5:

Question 3:

The predecessor of 1 in natural numbers is

- (a) 0
- (b) 2
- (c) -1
- (d) None of these

ANSWER:

(d) None of these

We know that the smallest natural number is 1. Hence, its predecessor does not exist.

PAGE NO 3.5:

Question 4:

The predecessor of 1 in whole numbers is

- (a) 0
- (b) -1
- (c) 2
- (d) None of these

ANSWER:

- (a) 0

Predecessor of 1 = $1 - 1 = 0$

PAGE NO 3.6:

Question 5:

The predecessor of 1 million is

- (a) 9999
- (b) 99999
- (c) 999999
- (d) 1000001

ANSWER:

- (c) 9,99,999

We have:

1 million = 10,00,000

Predecessor of 1 million = $10,00,000 - 1$
= 9,99,999

PAGE NO 3.6:

Question 6:

The successor of 1 million is

- (a) 10001
- (b) 100001
- (c) 1000001
- (d) 10000001

ANSWER:

- (c) 10,00,001

We have:

$$1 \text{ million} = 10,00,000$$

$$\begin{aligned}\text{Successor of 1 million} &= 10,00,000 + 1 \\ &= 10,00,001\end{aligned}$$

PAGE NO 3.6:

Question 7:

The product of the successor and predecessor of 99 is

- (a) 9800
- (b) 9900
- (c) 1099
- (d) 9700

ANSWER:

- (a) 9800

We have:

$$\text{Successor of 99} = 99 + 1 = 100$$

$$\text{Predecessor of 99} = 99 - 1 = 98$$

$$\text{Their product} = 100 \times 98 = 9800$$

PAGE NO 3.6:

Question 8:

The product of a whole number (other than zero) and its successor is

- (a) an even number
- (b) an odd number
- (c) divisible by 4
- (d) divisible by 3

ANSWER:

(a) an even number

Example:

Whole number = 1

Successor of 1 = $1 + 1 = 2$

Their product = $1 \times 2 = 2$

Thus, 2 is an even number.

PAGE NO 3.6:**Question 9:**

The product of the predecessor and successor of an odd natural number is always divisible by

- (a) 2
- (b) 4
- (c) 6
- (d) 8

ANSWER:

(d) 8

The predecessor of an odd number is an even number.

The successor of an odd number is also an even number.

These two even numbers are two consecutive even numbers, and the product of two consecutive even numbers is always divisible by 8.

PAGE NO 3.6:**Question 10:**

The product of the predecessor and successor of an even natural number is

- (a) divisible by 2
- (b) divisible by 3
- (c) divisible by 4
- (d) an odd number

ANSWER:

(d) an odd number

Example:

Even natural number = 2

Predecessor of 2 = $2 - 1 = 1$

Successor of 2 = $2 + 1 = 3$

Their product = $1 \times 3 = 3$

Thus, the product is an odd number.

PAGE NO 3.6:

Question 11:

The successor of the smallest prime number is

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

ANSWER:

The smallest prime number is 2

So, Successor of 2 = $2 + 1 = 3$

Hence, the correct answer is option (c).

PAGE NO 3.6:

Question 12:

If x and y are co-primes, then their LCM is

- (a) 1
- (b) x/y
- (c) xy
- (d) None of these

ANSWER:

A set of numbers which do not have any other common factor other than 1 are called co-prime.

The LCM of two co-prime numbers is equal to their product.

Hence, the correct answer is option (c).

PAGE NO 3.6:

Question 13:

The HCF of two co-primes is

- (a) the smaller number
- (b) the larger number

- (c) product of the numbers
- (d) 1

ANSWER:

A set of numbers which do not have any other common factor other than 1 are called co-prime.

The HCF of two co-prime numbers is 1.

Hence, the correct answer is option (d).

PAGE NO 3.6:

Question 14:

The smallest number which is neither prime nor composite is

- (a) 0
- (b) 1
- (c) 2
- (d) 3

ANSWER:

The smallest number which is neither prime nor composite is 1

Hence, the correct answer is option (b).

PAGE NO 3.6:

Question 15:

The product of any natural number and the smallest prime is

- (a) an even number
- (b) an odd number
- (c) a prime number
- (d) None of these

ANSWER:

The smallest prime number is 2.

Thus, when we multiply any natural number we will always get an even number.

Hence, the correct answer is option (a).

PAGE NO 3.6:

Question 16:

Every counting number has an infinite number of

- (a) factors

- (b) multiples
- (c) prime factors
- (d) None of these

ANSWER:

Multiples are what we get after multiplying the number by any number. Thus, every counting number has an infinite number of multiples. Hence, the correct answer is option (b).

PAGE NO 3.6:

Question 17:

The product of two numbers is 1530 and their HCF is 15. The LCM of these numbers is

- (a) 102
- (b) 120
- (c) 84
- (d) 112

ANSWER:

Product of two numbers = HCF of two numbers $\times$ LCM of two numbers
 $\Rightarrow 1530 = 15 \times \text{LCM of two numbers}$
 $\Rightarrow \text{LCM of two numbers} = 1530 / 15 = 102$
Hence, the correct answer is option (a).

PAGE NO 3.6:

Question 18:

The least number divisible by each of the numbers 15, 20, 24 and 32 is

- (a) 960
- (b) 480
- (c) 360
- (d) 640

ANSWER:

LCM of 15, 20, 24 and 32 is given by

$$15 = 3 \times 5 = 3^1 \times 5^1$$

$$20 = 2 \times 2 \times 5 = 2^2 \times 5^1$$

$$24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3^1$$

$$32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$$

$$\text{LCM} = 2^5 \times 3^1 \times 5^1 = 480$$

Hence, the correct answer is option (b).

PAGE NO 3.6:

Question 19:

The greatest number which divides 134 and 167 leaving 2 as remainder in each case is

- (a) 14
- (b) 19
- (c) 33
- (d) 17

ANSWER:

First we subtract the required remainder from 134 and 167.

Thus, we will get 132 and 165.

$$132 = 2 \times 2 \times 3 \times 11 = 2^2 \times 3 \times 11$$

$$165 = 3 \times 5 \times 11 = 3^1 \times 5 \times 11$$

$$\text{HCF} = 3 \times 11 = 33$$

Thus, the greatest number which divides 134 and 167 leaving 2 as remainder in each case is 33

Hence, the correct answer is option (c).

PAGE NO 3.6:

Question 20:

Which of the following numbers is a prime number?

- (a) 91
- (b) 81
- (c) 87
- (d) 97

ANSWER:

Since, factors of

$$91 = 1 \times 7 \times 13$$

$$81 = 1 \times 3 \times 3 \times 3 \times 3$$

$$87 = 1 \times 3 \times 29$$

$$97 = 1 \times 97$$

Thus, 81, 87 and 91 all are not prime numbers.

Hence, the correct answer is option (d).

PAGE NO 3.6:

Question 21:

If two numbers are equal, then

- (a) their LCM is equal to their HCF
- (b) their LCM is less than their HCF
- (c) their LCM is equal to two times their HCF
- (d) None of these

ANSWER:

If two numbers are equal, then their LCM is equal to their HCF
Hence, the correct answer is option (a).

PAGE NO 3.6:**Question 22:**

a and b are two co-primes. Which of the following is/are true?

- (a) $\text{LCM}(a, b) = a \times b$
- (b) $\text{HCF}(a, b) = 1$
- (c) Both (a) and (b)
- (d) Neither (a) nor (b)

ANSWER:

A set of numbers which do not have any other common factor other than 1 are called co-prime.

The LCM of two co-prime numbers is equal to their product.

The HCF of two co-prime numbers is 1.

Hence, the correct answer is option (c).