RD SHARMA

Solutions

Class 6 Maths

Chapter 2

Ex 2.3

1.) What are prime numbers? List all the prime numbers between 1 and 30.

Answer:

Those numbers with only two factors, i.e., 1 and the number itself, are known as prime numbers.

Examples: 2, 3, 5, 7. 11 and 13

The prime numbers between 1 and 30 are 2, 3, 5, 7, 11, 13, 17, 19, 23 and 29.

2.) Write all the prime numbers between:

Answer:

(i)10 and 50

The prime numbers between 10 and 50 are 11, 13, 17, 19, 23, 29, 31, 37, 41, 43 and 47.

(ii)70 and 90

The prime numbers between 70 and 90 are 71, 73, 79, 83 and 89.

(iii) 40 and 85

The prime numbers between 40 and 85 are 41, 43, 47, 53, 59, 61, 67, 71, 73, 79 and 83.

(iv)60 and 100

The prime numbers between 60 and 100 are 61, 67, 71, 73, 79, 83, 89 and 97.

3.) What is the smallest prime number? Is it an even number?

Answer:

The number 2 is the smallest prime number.

It is an even prime number. Except 2, all other even numbers are composite numbers.

4.) What is the smallest odd prime? Is every odd number a prime number? If not, give an example of an odd number which is not prime.

If yes, write the smallest odd composite number.

Answer:

The smallest odd prime number is 3.

No, every odd number is not a prime number. For example, 9 is an odd number but it is not a prime number because its three factors are 1, 3 and 9.

5. What are composite numbers? Can a composite number be odd?

Answer:

A number which has more than two factors is called a composite number.

For example, the numbers 4, 6, 8, 9 10 and 15 are composite numbers.

Yes, a composite number can be an odd number. The smallest odd number is 9.

6.) What are twin-primes? Write all pairs of twin-primes between 50 and 100.

Answer:

Twin primes: Two prime numbers are said to be twin primes if there is only one composite number between them.

For example, (3, 5) and (5, 7) are twin primes.

Twin primes between 50 and 100 are (59, 61) and (71, 73).

7.) What are co-primes? Give examples of five pairs of co-primes. Are co-primes always prime?

Answer:

Two numbers are said to be co-primes if they do not have any common factors other than 1.

For example, (2, 3), (3, 4), (4, 5), (5, 7) and (13, 17) are co-primes.

Two co-primes numbers need not be both prime numbers.

e.g., (3, 4), (6, 7) and (4, 13).

8.) Which of the following pairs are always co-primes?

Answer:

(i) Two prime numbers

Two prime numbers are always co-primes to each other.

Example: 7 and 11 are co-primes to each other.

(ii) One prime and one composite number

One prime and one composite number are not always co-prime

Example: 3 and 21 are not co-primes to each other.

(iii) Two composite numbers

Two composite numbers are not always co-primes to each other.

Example: 4 and 6 are not co-primes to each other.

9.) Express each of the following numbers as a sum of two or more primes:

Answer:

We can write the given numbers as the sums of the two or more primes as follows:

(i) 13 = 11 + 2

(ii) 130= 59 + 71

(iii) 180 = 139 +17 +11 + 13 or 79 + 101

10.) Express each of the following numbers as the sum of two odd primes:

Answer:

We can express the given numbers as the sums of two odd primes as follows:

(i) 36 = 7 + 29 or 17 + 19

(ii) 42 = 5 +37 or 13 + 29

(iii) 84 = 17 +67 or 23 +61

11.) Express each of the following numbers as the sum of three odd prime numbers:

Answer:

We can express the given numbers as the sums of three odd prime numbers as follows:

(i) 31 = 5 + 7+ 9 + 13 or 31 = 11 + 13 + 7

(ii) 35= 5 + 7 +23 or 35 = 17 +13 + 5

(iii) 49 = 3 + 5 +41 or 49 = 7 +11 +31

12.) Express each of the following numbers as the sum of twin primes:

Answer:

We can express the given numbers as the sums of twin primes which are as follows:

(i) 36= 17 +19

(ii) 84 = 41 + 41

(iii) 120 = 59 +61

13.) Find the possible missing twins for the following numbers so that they become twin primes:

Answer:

(i) The possible missing twins for 29 are 27 and 31. Since 31 is a prime and 37 is not, 31 is the missing twin.

(ii) The possible missing twins for 89 are 87 and 91. Since 87 and 91 are not primes, 89 has no twin.

(iii) The possible twins for 101 are 99 and 103. Since 103 is a prime and 99 is not , 103 is the missing twin.

14.) A list consists of the following pairs of numbers:

Answer:

(i) Co-primes: Two natural numbers are said to be co-primes numbers if they have 1 as their only common factor.

Hence, all the given pairs of numbers are co-primes.

(ii) Primes: Natural numbers which have exactly two distinct factors, i.e., 1 and the number itself are called prime numbers.

Hence, (59, 61) and (71, 73) are pairs of prime numbers.

(iii) Composite numbers: Natural numbers which have more than two factors are called composite numbers.

Hence, (55, 57) and (63, 65) are pairs of composite numbers.

15.) For a number, greater than 10, o be prime what may be the possible digit in the unit's place?

Answer:

For a number (greater than 10) to be a prime number, the possible digit in the unit's place may be 1, 3, 7 or 9.

Example: 11, 13, 17 and 19 are prime numbers greater than 10.

16.) Write seven consecutive composite numbers less than 100 so that there is no prime number between them.

Answer:

The required seven consecutive composite numbers are 90, 91, 92, 93, 94, 95 and 96.

17.) State true (T) and false (F):

(i) The sum of primes cannot be a prime.

Answer: False.

2 + 3 = 5 which is a prime number.

(ii) The product of primes cannot be a prime.

Answer: True.

The product of prime number is always a composite number.

(iii) An even number is composite

Answer: False

The even number 2 is not a composite number.

(iv) Two consecutive numbers cannot be a prime.

Answer: False

2 and 3 are consecutive and are also prime numbers.

(v) Odd numbers cannot be composite.

Answer: False.

9 is an odd number but it is composite numbers as its factor are 1, 3 and 9.

(vi)Odd numbers cannot be written as sum of primes.

Answer: False

9 is an odd number: 9 = 7 +2 where 7 and 2 are prime numbers.

(vii) A number and its successor are always co-primes.

Answer: True

A number and its successor have only one common factor (i.e., 1).

18.) Fill in the Blank:

Answer:

(i) A number having only two factors is called a prime number.

(ii) A number having more than two factors is called a composite number.

(iii) 1 is neither composite nor prime.

(iv) The smallest prime number is 2.

(v) The smallest composite number is 4.