

Exercise 2.3

Q.1 what are prime numbers. List all primes between 1 and 30.

Solution : Prime numbers : Numbers which are divisible by 1 or itself only are known as prime numbers

Prime numbers between 1 and 30 are :

2, 3, 5, 7, 11, 13, 17, 19, 23, 29

Q.2 Write all Prime numbers between :

(i) 10 and 50 : 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

(ii) 70 and 90 : 71, 73, 79, 83, 89

(iii) 40 and 85 : 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83

(iv) 60 and 100 : 61, 67, 71, 73, 79, 83, 89, 97

Q.3 What is the smallest Prime number? Is it even number.

Sol! '2' is the smallest prime number which is even.

Q.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.

Sol! '3' is the smallest odd Prime. No, every odd number is not prime. For example 9, 15, 21 are not prime.

Q.5 What are composite numbers? Can a composite number be odd? If yes write the smallest odd composite number.

Solution Composite number: Numbers other than 1 and Prime are Composite numbers.
For example 4, 8, 10, 12, 15 --- are Composite numbers.

Yes, Composite number can be odd.

'9' is the smallest odd Composite number.

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

Solution: Twin primes: Pair of Prime numbers whose difference is 2.

Twin primes between 50 and 100 are:

59, 61 ; 71, 73

Q.7 What are coprimes? Give example of five pairs of coprimes. Are coprimes always prime? If no illustrate your answer by an example.

Solution Coprime: The numbers which do not have common factor other than 1.

Example: 2, 3 ; 3, 4 ; 5, 6 ; 8, 13 ; 12, 23

No, Coprimes are not always Prime.

For example 12, 25 are Coprimes but they are not primes.

Q8 Which of the following pairs are always co-primes?

- (i) Two Prime numbers (ii) one Prime and one Composite numbers.
(iii) Two Composite numbers.

Solution (i) Two prime numbers are always Coprimes. For example 7, 11 are Coprimes
(ii) one Prime and one Composite are not always Coprimes. Example (3, 21) are not Coprimes.
(iii) Two Composite are not always Coprimes.
For example 6 and 8 are not Coprime.

Q9 Express each of the following numbers as a sum of two Primes.

(i) 13

(ii) 130

(iii) 180

Solution (i) $13 = 3 + 3 + 7$

(ii) $130 = 59 + 71$

(iii) $180 = 79 + 101$

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

(i) 36

(ii) 42

(iii) 84

Solution (i) $36 = 17 + 19$

(ii) $42 = 19 + 23$

(iii) $84 = 41 + 43$

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

(i) 31

(ii) 35

(iii) 49

Solution (i) $31 = 5 + 7 + 19$

(ii) $35 = 5 + 7 + 23$

(iii) $49 = 3 + 5 + 41$

Q.12 Express each of the following as sum of twin primes.

(i) 36

(ii) 84

(iii) 120

Solution (i) $36 = 17 + 19$

(ii) $84 = 41 + 43$

(iii) $120 = 59 + 61$

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

(i) 29

(ii) 89

(iii) 101

Solution: (i) 29 and 31

(ii) 89 can not have twin pair

(iii) 101 and 103

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

(1) 51, 53; 55, 57; 59, 61; 63, 65; 67, 69; 71, 73

Categorise them as pairs of

(i) Coprimes (ii) Primes (iii) Composites.

Solution (i) Coprimes: Since all pairs are not having any common factor other than 1. So all pairs are Coprimes.

(ii) Primes: Pairs 59, 61 and 71, 73 are Primes.

(iii) Composites: Pairs 55, 57 and 63, 65 are pairs of Composite numbers.

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

Solution: The possible digits to be prime can be

1, 3, 7 or 9. as 11, 13, 17 and 19 are primes

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

Solution: Numbers are 90, 91, 92, 93, 94, 95 and 96.

Q.17: State true or false.

- (i) The sum of Primes can not be prime.
- (ii) The Product of Primes can not be prime.
- (iii) An even number is composite.
- (iv) Two consecutive numbers can not be both primes.
- (v) odd numbers can not be composite.
- (vi) odd numbers can not be written as sum of Primes.
- (vii) A number and its successor are always coprimes.

Sol: (i) False (ii) True (iii) False (iv) ~~True~~
 (v) False (vi) False (vii) True

Q.18 Fill in the blanks in the following

- (i) A number having only two factors is called ---
- (ii) A number having more than two factors is called a ---
- (iii) 1 is neither --- nor ---
- (iv) The smallest prime number is ---
- (v) The smallest composite number is ---

Answers (i) Prime number (ii) Composite number.

(iii) Prime, Composite (iv) 2 (v) 4