

CHAPTER – 3

Playing with Numbers

EXERCISE – 3.2

Q. 1

What is the sum of any two

(a) Odd numbers? (b) Even numbers?

Answer:

Odd number is a number that cannot be divided by 2.

An even number is a number that can be divided by 2.

a. The sum of two odd numbers is even;

For example

$$3 + 5 = 8$$

$$7 + 11 = 18$$

$$13 + 19 = 32$$

b. The sum of two even numbers is even;

Example-

$$2 + 6 = 8$$

$$8 + 10 = 18$$

$$16 + 16 = 32$$

Q. 2

State whether the following statements are True or False:

- (a) The sum of three odd numbers is even.
- (b) The sum of two odd numbers and one even number is even.
- (c) The product of three odd numbers is odd.
- (d) If an even number is divided by 2, the quotient is always odd.
- (e) All prime numbers are odd.
- (f) Prime numbers do not have any factors.
- (g) Sum of two prime numbers is always even.
- (h) 2 is the only even prime number.
- (i) All even numbers are composite numbers.
- (j) The product of two even numbers is always even.

Answer:

a. False.

For example- $1 + 3 + 5 = 9$, this is an odd number.

b. True.

Example- $1 + 3 + 4 = 8$, this is an even number.

c. True.

Example- $1 \times 3 \times 5 = 15$, it is an odd number.

d. False.

If an even number is divided by 2, the quotient is not always odd it can be even also.

For example-

$8 \div 2 = 4$, it is an even number.

e. False.

All prime numbers are not odd, 2 is a prime number and it is an even number.

f. False.

Prime numbers do have factors like 1 and the numbers itself are the factors of the numbers.

g. False.

Sum of two prime numbers is not always even.

Example- $2 + 3 = 5$ it is an odd number.

h. True.

2 is the only even prime number.

i. False.

All even numbers are not composite numbers, 2 is the prime number.

j. True.

The product of two even numbers is always even.

Example- $4 \times 6 = 24$, it is an even number.

Q. 3

The numbers 13 and 31 are prime numbers. Both these numbers have same digits 1 and 3. Find such pairs of prime numbers upto 100.

Answer:

Prime numbers are the numbers that can be divided by 1 and by the number itself.

Such pairs of prime numbers are:

17 and 71

37 and 73

79 and 97

Q. 4

Write down separately the prime and composite numbers less than 20.

Answer:

Prime numbers are the numbers that has only two factors: 1 and number itself.

A composite number has more than two factors.

Prime numbers less than 20 are;

2, 3, 5, 7, 11, 13, 17 and 19.

Composite numbers less than 20 are;

4, 6, 8, 9, 10, 12, 14, 15, 16, and 18.

Note: Every Number that is not a prime number is a composite number.

Q. 5

What is the greatest prime number between 1 and 10?

Answer:

First look for all the prime numbers between 1 and 10;

2, 3, 5, and 7.

Among these prime numbers 7 is the greatest.

Q. 6

Express the following as the sum of two odd primes:

(a) 44 (b) 36

(c) 24 (d) 18

Answer:

a. $44 = 39 + 5$

b. $36 = 29 + 7$

c. $24 = 17 + 7$

d. $18 = 13 + 5$

Q. 7

Give three pairs of prime numbers whose difference is 2.

Answer:

Pairs of prime numbers whose difference is 2 are;

1) 5 and 7

$$7 - 5 = 2$$

2) 21 and 23

$$23 - 21 = 2$$

3) 91 and 93

$$93 - 91 = 2$$

Q. 8

Which of the following numbers are prime?

(a) 23 (b) 51

(c) 37 (d) 26

Answer:

a. 23 is a prime number;

$$23 = 1 \times 23$$

$$23 = 23 \times 1$$

Prime numbers are the numbers that can be divided by 1 and by number itself. So, 23 has two factors 1 and 23. It is a prime number.

b. 51 is a composite number,

$$51 = 1 \times 51$$

$$51 = 3 \times 17$$

$$51 = 17 \times 3$$

$$51 = 51 \times 1$$

So, it has four factors, 1, 3, 17, and 51. Therefore it is a composite number not a prime number.

c. 37 is a prime number,

$$37 = 1 \times 37$$

$$37 = 37 \times 1$$

Prime numbers are the numbers that can be divided by 1 and by number itself. 37 just have two factors 1 and 37. So it is a prime number.

d.26

$$26 = 1 \times 26$$

$$26 = 13 \times 2$$

$$26 = 2 \times 13$$

$$26 = 26 \times 1$$

It has four factors 1, 2, 13 and 26,

So, it's not a prime number it is a composite number.

Q. 9

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

Answer:

Between 89 and 97, both of which are prime numbers, there are 7 composite numbers,

90 = 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, and 90

91 = 1, 7, 13, and 91

92 = 1, 2, 4, 23, 46, and 92

93 = 1, 3, 31 and 93

$94 = 1, 2, 47, \text{ and } 94$

$95 = 1, 5, 19 \text{ and } 95$

$96 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48 \text{ and } 96$

Hence, 90, 91, 92, 93, 94, 95 and 96 are the composite numbers between 89 and 97.

Q. 10

Express each of the following numbers as the sum of three odd primes:

(a) 21 (b) 31

(c) 53 (d) 61

Answer:

a. $21 = 5 + 5 + 11$

Clearly, 5 and 11 are prime numbers.

b. $31 = 5 + 7 + 19$

Clearly, 5, 7 and 19 are prime numbers.

c. $53 = 5 + 17 + 31$

Clearly, 5, 17 and 31 are prime numbers.

d. $61 = 13 + 17 + 31$

Clearly, 13, 17 and 31 are prime numbers.

Q. 11

Write five pairs of prime numbers below 20 whose sum is divisible by 5.

Answer:

These are the pairs of prime numbers below 20 whose sum is divisible by 5;

$$2 + 3 = 5$$

$$3 + 7 = 10$$

$$7 + 13 = 20$$

$$17 + 3 = 20$$

$$19 + 11 = 30$$

Q. 12

Fill in the blanks.

(a) A number which has only two factors is called a

(b) A number which has more than two factors is called a

(c) 1 is neither nor

(d) The smallest prime number is

(e) The smallest composite number is

(f) The smallest even number is

Answer:

a. A number which has only two factors is called a Prime number

Explanation: A number which has only two whole number factors is called a prime number. It has only two whole number factors i.e. on the number itself and other. Example: 2 is a prime number.

- b.** A number which has more than two factors is called a Composite number

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

Example: 4 is a prime number.

- c.** 1 is neither prime nor composite

Explanation: 1 is neither prime nor composite number. Because 1 has no other whole number factor other than itself. So, it's not prime and therefore not composite as well.

- d.** The smallest prime number is 2.

Explanation: The smallest prime number is 2 because, it has only two whole number factors, one the number itself and other 1.

- e.** The smallest composite number is 4

Explanation: The smallest composite number is 4 because, it has only three whole number factors i.e. 1, 2 and 4.

- f.** The smallest even number is 2

Explanation: The smallest even number is 2. Because an integer divisible by 2 is an even number.