

Access NCERT Solutions for Class 6

Chapter 3: Playing With Numbers

Exercise 3.1 page no: 50

1. Write all the factors of the following numbers:

(a) 24

(b) 15

(c) 21

(d) 27

(e) 12

(f) 20

(g) 18

(h) 23

(i) 36

Solutions:

(a) 24

$$24 = 1 \times 24 \quad 24 = 2 \times 12 \quad 24 = 3 \times 8$$

$$24 = 4 \times 6 \quad 24 = 6 \times 4$$

Stop here since 4 and 6 have occurred earlier

Hence, the factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24

(b) 15

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

Stop here since 3 and 5 have occurred earlier

Hence, the factors of 15 are 1, 3, 5 and 15

(c) 21

$$21 = 1 \times 21 \quad 21 = 3 \times 7 \quad 21 = 7 \times 3$$

Stop here since 3 and 7 have occurred earlier

Hence, the factors of 21 are 1, 3, 7 and 21

(d) 27

$$27 = 1 \times 27 \quad 27 = 3 \times 9 \quad 27 = 9 \times 3$$

Stop here since 3 and 9 have occurred earlier

Hence, the factors of 27 are 1, 3, 9 and 27

(e) 12

$$12 = 1 \times 12 \quad 12 = 2 \times 6 \quad 12 = 3 \times 4 \quad 12 = 4 \times 3$$

Stop here since 3 and 4 have occurred earlier

Hence, the factors of 12 are 1, 2, 3, 4, 6 and 12

(f) 20

$$20 = 1 \times 20 \quad 20 = 2 \times 10 \quad 20 = 4 \times 5 \quad 20 = 5 \times 4$$

Stop here since 4 and 5 have occurred earlier

Hence, the factors of 20 are 1, 2, 4, 5, 10 and 20

(g) 18

$$18 = 1 \times 18 \quad 18 = 2 \times 9 \quad 18 = 3 \times 6 \quad 18 = 6 \times 3$$

Stop here since 3 and 6 have occurred earlier

Hence, the factors of 18 are 1, 2, 3, 6, 9 and 18

N
M

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

•

(h) 23

$$23 = 1 \times 23 \quad 23 = 23 \times 1$$

Since 1 and 23 have occurred earlier

Hence, the factors of 23 are 1 and 23

(i) 36

$$36 = 1 \times 36 \quad 36 = 2 \times 18 \quad 36 = 3 \times 12 \quad 36 = 4 \times 9$$

$$36 = 6 \times 6$$

Stop here, since both the factors (6) are same. Thus the factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18 and 36

2. Write first five multiples of:

(a) 5

(b) 8

(c) 9

Solutions:

(a) The required multiples are:

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

$$5 \times 3 = 15$$

$$5 \times 4 = 20$$

$$5 \times 5 = 25$$

Hence, the first five multiples of 5 are 5, 10, 15, 20 and 25

(b) The required multiples are:

$$8 \times 1 = 8$$

$$8 \times 2 = 16$$

$$8 \times 3 = 24$$

$$8 \times 4 = 32$$

$$8 \times 5 = 40$$

Hence, the first five multiples of 8 are 8, 16, 24, 32 and 40

(c) The required multiples are:

$$9 \times 1 = 9$$

$$9 \times 2 = 18$$

$$9 \times 3 = 27$$

$$9 \times 4 = 36$$

$$9 \times 5 = 45$$

Hence, the first five multiples of 9 are 9, 18, 27, 36 and 45

3. Match the items in column 1 with the items in column 2.

Column 1 Column 2

(i) 35 (a) Multiple of 8

(ii) 15 (b) Multiple of 7

(iii) 16 (c) Multiple of 70

(iv) 20 (d) Factor of 30

(v) 25 (e) Factor of 50

(f) Factor of 20

Solutions:

(i) 35 is a multiple of 7

Hence, option (b)

(ii) 15 is a factor of 30

Hence, option (d)

(iii) 16 is a multiple of 8

Hence, option (a)

(iv) 20 is a factor of 20

Hence, option (f)

(v) 25 is a factor of 50

Hence, option (e)

4. Find all the multiples of 9 upto 100.

Solutions:

$$9 \times 1 = 9 \quad 9 \times 2 = 18 \quad 9 \times 3 = 27 \quad 9 \times 4 = 36 \quad 9 \times 5 = 45 \quad 9 \times 6 = 54$$

$$9 \times 7 = 63 \quad 9 \times 8 = 72 \quad 9 \times 9 = 81 \quad 9 \times 10 = 90 \quad 9 \times 11 = 99$$

\therefore All the multiples of 9 upto 100 are 9, 18, 27, 36, 45, 54, 63, 72, 81, 90 and 99

Exercise 3.2 PAGE no: 53

1. What is the sum of any two (a) Odd numbers? (b) Even numbers?

Solutions:

(a) The sum of any two odd numbers is even numbers.

Examples: $5 + 3 = 8$

$$15 + 13 = 28$$

(b) The sum of any two even numbers is even numbers

Examples: $2 + 8 = 10$

$$12 + 28 = 40$$

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.

Solutions:

(a) True. The sum of two odd numbers is even

Example: $7 + 9 = 16$ i.e even number

(b) True. The sum of two odd numbers and one even numbers is even.

Example: $3 + 5 + 8 = 16$ i.e is even number.

(c) True. The product of three odd numbers is odd.

Example: $3 \times 7 \times 9 = 189$ i.e is odd number.

(d) False. If an even number is divided by 2, the quotient is even.

Example: $8 \div 2 = 4$

(e) False, All prime numbers are not odd.

Example: 2 is a prime number but it is also an even number.

(f) False. Since, 1 and the number itself are factors of the number

(g) False. Sum of two prime numbers may also be odd number

Example: $2 + 5 = 7$ i.e odd number.

(h) True. 2 is the only even prime number.

(i) False. Since, 2 is a prime number.

(j) True. The product of two even numbers is always even.

Example: $2 \times 4 = 8$ i.e even number.

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.

Solutions:

The prime numbers with same digits upto 100 are as follows:

17 and 71

37 and 73

79 and 97

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

Solutions:

2, 3, 5, 7, 11, 13, 17 and 19 are the prime numbers less than 20

4, 6, 8, 9, 10, 12, 14, 15, 16 and 18 are the composite numbers less than 20

5. What is the greatest prime number between 1 and 10?

Solutions:

2, 3, 5 and 7 are the prime numbers between 1 and 10. 7 is the greatest prime number among them.

6. Express the following as the sum of two odd primes.

(a) 44

(b) 36

(c) 24

(d) 18

Solutions:

(a) $3 + 41 = 44$

(b) $5 + 31 = 36$

(c) $5 + 19 = 24$

(d) $5 + 13 = 18$

7. Give three pairs of prime numbers whose difference is 2. [Remark: Two prime numbers whose difference is 2 are called twin primes].

Solutions:

The three pairs of prime numbers whose difference is 2 are

3, 5

5, 7

11, 13

8. Which of the following numbers are prime?

(a) 23

(b) 51

(c) 37

(d) 26

Solutions:

(a) 23

$$1 \times 23 = 23$$

$$23 \times 1 = 23$$

Therefore 23 has only two factors 1 and 23. Hence, it is a prime number.

(b) 51

$$1 \times 51 = 51$$

$$3 \times 17 = 51$$

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

(c) 37

$$1 \times 37 = 37$$

$$37 \times 1 = 37$$

Therefore 37 has two factors 1 and 37. Hence, it is a prime number.

(d) 26

$$1 \times 26 = 26$$

$$2 \times 13 = 26$$

Therefore 26 has four factors 1, 2, 13 and 26. Hence, it is not a prime number, it is a composite number.

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

Solutions:

Seven composite numbers between 89 and 97 both which are prime numbers are 90, 91, 92, 93, 94, 95 and 96

Numbers Factors

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

91 1, 7, 13, 91

92 1, 2, 4, 23, 46, 92

93 1, 3, 31, 93

94 1, 2, 47, 94

95 1, 5, 19, 95

96 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96

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

(a) 21

(b) 31

(c) 53

(d) 61

Solutions:

(a) $3 + 5 + 13 = 21$

(b) $3 + 5 + 23 = 31$

(c) $13 + 17 + 23 = 53$

(d) $7 + 13 + 41 = 61$

11. Write five pairs of prime numbers less than 20 whose sum is divisible by 5. (Hint: $3 + 7 = 10$)

Solutions:

The five pairs of prime numbers less than 20 whose sum is divisible by 5 are

$$2 + 3 = 5$$

$$2 + 13 = 15$$

$$3 + 17 = 20$$

$$7 + 13 = 20$$

$$19 + 11 = 30$$

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 _____.

Solutions:

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

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

(c) 1 is neither prime number nor composite number.

(d) The smallest prime number is 2

(e) The smallest composite number is 4

(f) The smallest even number is 2.