

Factor & multiples

Factors :

If a number is exactly divisible by the another number, without leaving any remainder.

Or

An exact divisor of a number is called a factor of the number.

Note

- ❖ 1 is the factor of every number .
- ❖ Every number is a factor of itself.
- ❖ A number is exactly divisible by its factors.
- ❖ Factors of a number are less than or equal to that number.
- ❖ Number of factor of a number are finite.

Example 1. Find all the factors of 200.

- a.
- b.
- c.
- d.

Multiples

A multiple of a number is the number obtained by multiplying it with other number.

Or

The product of two or more number is said to be a multiple of each of those numbers.

Note

- ❖ Multiple of a number is greater than or equal to that number.
- ❖ Every number is a multiple of itself.
- ❖ Every multiple of a number is exactly divisible by the number of multiples of a number are infinite.

Example 2. Find the first eight multiples of between 200 and 300.

- a.
- b.
- c.
- d.

Common Factors

Factors that two numbers have in common are called the common factors of those numbers.

Example 3. What are the common factor of 10 and 15?

Common Multiples

A common multiple is a number that is a multiple of two or more numbers.

Example 3. Common multiple of 20 and 28 is 4, because

$$4 \times 5 = 20, \quad 4 \times 7 = 28$$

Prime Factor

The prime factors of a quantity are all of the prime quantities that will exactly divide the given quantity.

Example 4. Find the prime factors of 8

Exercise

1. Which of the following is not a factor of 316 ? (JNV 2011, 2002)

- a. 1
- b. 8
- c. 79
- d. 158

Answer- B

2. What is the prime factorization of 37800? (JNV 2005)

- a. $2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 7 \times 7$
- b. $2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 5 \times 7$
- c. $8 \times 27 \times 25 \times 7$
- d. $2 \times 4 \times \times 25 \times 27 \times 7$

Answer- B

3. factors of 30 are .(JNV2004)

- a. 2,3,5
- b. 1,2,3,5,10
- c. 1,2,3,10,15
- d. 1,2,3,5,6,10,15,30

Answer- D

4. How many times does 9 come in writing the number from 1 to 100 ? (JNV 2004)

- a. 9
- b. 100
- c. 20
- d. 21

Answer- C

5. The number of prime factors of 105 is (JNV 2001)

- a. 2
- b. 3
- c. 4
- d. 5

Answer- B

6. The total number of the factors of 24 is (JNV 2000)

- a. 8
- b. 7
- c. 4
- d. 9

Answer- A

7. The prime factors of 80 is (JNV 1999)

a. $2 \times 2 \times 2 \times 2 \times 5$

b. $2 \times 2 \times 2 \times 5 \times 5$

c. $2 \times 2 \times 2 \times 5$

d. $2 \times 2 \times 5 \times 5$

Answer- A

8. The factor of each odd number is (JNV 1999)

a. 0

b. 1

c. 3

d. 5

Answer- B

9. The number of multiples of 3 which are less than 25 is (JNV1998)

a. 6

b. 7

c. 9

d. 8

Answer- D

10. The number of factors of 36 is (JNV 1997)

a. 6

b. 7

c. 8

d. 9

Answer- D

11. The multiple of 7 between 14 and 77 is (JNV 1996)

a. 10

b. 9

c. 8

d. 7

Answer- C

12. The prime factor of 240 are (JNV 1993)

a. $2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 1$

b. $4 \times 2 \times 2 \times 3 \times 1$

c. $8 \times 3 \times 5 \times 1$

d. $16 \times 5 \times 1$

Answer- A

Practice exercise

1. The total number of the factors of 81 is

- a. 6
- b. 5
- c. 4
- d. 7

Answer- B

2. The total number of the factors of 54 is

- a. 6
- b. 8
- c. 7
- d. 5

Answer- B

3. The prime factors of 120 are

- a. $2 \times 2 \times 3 \times 8$
- b. $2 \times 9 \times 5$
- c. $2 \times 3 \times 3 \times 5$
- d. $2 \times 2 \times 2 \times 3 \times 5$

Answer- D

4. The prime factors of 48 are

- a. $2 \times 2 \times 12$

b. 2×24

c. $2 \times 2 \times 2 \times 6$

d. $2 \times 2 \times 2 \times 2 \times 3$

Answer- D

5. What are the numbers of multiples of 5, which are less than 45?

a. 9

b. 8

c. 7

d. 10

Answer- B

6. Which of the following is not a factor of 144 ?

a. 2

b. 3

c. 5

d. 1

Answer- C

7. which of the following is not a factors of 128 ?

a. 8

b. 2

c. 3

d. 4

Answer- C

8. Total number of the factors of 210 is

- a. 12
- b. 8
- c. 10
- d. 14

Answer- A

9. All prime factors of 150 are

- a. 2,3,5
- b. 3,5,10
- c. 2,3,5,5
- d. None of these

Answer- c

10. Which one of the following is true ?

- a. 1 is factor of every number
- b. The factors of a number are uncountable
- c. The multiples of a number are countable
- d. 1 is a multiple of every number

Answer- A

11. The sum of first five even multiples of 2 is

- a. 28
- b. 32

c. 40

d. 30

Answer- D

12. The sum of first 8 multiple of 3 is

a. 108

b. 110

c. 107

d. 105

Answer- A

13. The number $x, x+2, x+4$ are all prime, so x is

a. 3

b. 2

c. 11

d. 17

Answer- A

14. Which of the following is a prime factor ?

a. $84=2 \times 2 \times 2 \times 3 \times 7$

b. $112=2 \times 2 \times 14 \times 2$

c. $70=14 \times 5$

d. $45=5 \times 9$

Answer- A

15. Which of the following is a prime factor ?

a. $48=2\times2\times2\times6$

b. $63=3\times3\times7$

c. $81=3\times3\times9$

d. $54=2\times3\times9$

Answer-B

16. Common multiple number for 18 and 54 is

a. 8

b. 9

c. 7

d. 4

Answer- B

17. The number x , $x-2$ and $x-6$ are all prime numbers, so find the value of x .

a. 15

b. 17

c. 19

d. 21

Answer- C

18. Common multiple for the numbers 4,8 and 10, within the first 10 multiples is

a. 40

b. 20

c. 50

d. 48

Answer- A

19. Which of the following is not a prime factor?

a. $81 = 3 \times 3 \times 3 \times 3$

b. $102 = 2 \times 3 \times 17$

c. $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$

d. $98 = 7 \times 14$

Answer- D.

20. Which of the following is a prime factor of 168?

a. $2 \times 2 \times 6 \times 7$

b. $2 \times 4 \times 3 \times 7$

c. $2 \times 2 \times 2 \times 21$

d. $2 \times 2 \times 2 \times 3 \times 7$

Answer- D

21. Which of the following is always a factor of prime number?

a. 1

b. 2

c. 4

d. 7

Answer- A

22. Common multiple of numbers 6, 8 and within the first 10 multiples are

- a. 24, 40
- b. 24, 48
- c. 40, 60
- d. 36, 40, 23

Answer-B

23. The sum of first four multiple of 7 is

- a. 60
- b. 68
- c. 70
- d. 74

Answer-

24. Which of the following is not a factor of 200?

- a. 4
- b. 6
- c. 8
- d. 10

Answer- B

Self Practice

1. Sum of first five odd multiples of 3 are
 - a. 45
 - b. 75
 - c. 90
 - d. 60

Answer – B

2. The number of multiples of 3 between 18 and 54

a. 11

b. 12

c. 10

d. 14

Answer – A

3. Sum of first five multiples of 6 are

(1)-90 30 (3) 60 (4) 120 4. The prime factors of 75 are (2) 3
x 25 (3) 5 x 15 (4) $3 \times 5 \times 5$ (1) $3 \times 5 \times 3$ 5. All prime factors of
182 are (1) 2 and 13 6. The prime factors of 210 are (2) 2
and 7 (3) 2, 7 and 13 (4) None of these (1) 5 (2) 4 (3) 3 (4) 2
7. The prime factors of 2310 are (3) 2, 4, 6, 7, 11 (4) None of
these (1) 2, 3, 5, 7, 11 (2) 2, 3, 4, 7 (3) $4 \times 4 \times 3 \times 5$ (4) $4 \times 4 \times 15$
20 70 8. Prime factors of 240 are (1) $2 \times 2 \times 4 \times 3 \times 5$ (2)
 $2 \times 2 \times 2 \times 2 \times 3 \times 5$ 9. Multiple of first three multiple of 4 (1) 380
(2) 384 (3) 390 (4) 400