Thursday

Chapter - 2

8/7/21

Exercise 2.A

Q1 Define: i] factor ii] multiple. Give five examples of each.

→ i] Factor: A factor of a number is an exact divisor of that number.

ii] Multiple: A multiple of a number is a number obtained by multiplying it by a natural number

Example 1: We know that 15 = 1 × 15 and 15 = 3 × 5

∴ 1, 3, 5 and 5 are the factors of 15

In other words, we can say that 15 is a multiple of 1, 3, 5 and 15

Example 2: We know that 8 = 8 × 1, 8 = 2 × 4 and 8 = 4 × 2

∴ 1, 2, 4 and 8 are factors of 8

In other words, we can say that 8 is multiple of 1, 2, 4 and 8

Example 3: We know that 30 = 30 × 1, 30 = 5 × 6 and 30 = 6 × 5

Q.2. Write down all factors of:

i] 20

→ 20 = 1 × 20, 20 = 10 × 2 and 20 = 4 × 5

The factors of 20 are 1, 2, 4, 5, 10 and 20.

ii] 36

→ 36 = 1 × 36, 36 = 2 × 18, 36 = 3 × 12 and 36 = 4 × 9

The factors of 36 are 1, 2, 3, 4, 6, 9, 12 and 36

iii] 60

→ 60 = 1 × 60, 60 = 2 × 30, 60 = 3 × 20, 60 = 4 × 15, and 60 = 5 × 12

The factors of 60 are 1, 2, 3, 4, 5, 6, 10, 12, 15 and 60.

iv] 75

→ 75 = 1 × 75, 75 = 3 × 25 and 75 = 5 × 15

The factors of 75 are 1, 3, 5, 15, 25 and 75.

Q.3. Write the first five multiples of each of the following numbers:

i] 17

→ $17 \times 1 = 17$, $17 \times 2 = 34$, $17 \times 3 = 51$, $17 \times 4 = 68$ and $17 \times 5 = 85$

∴ The first five multiples of 17 are 17, 34, 51, 68 and 85

ii] 23

→ $23 \times 1 = 23$, $23 \times 2 = 46$, $23 \times 3 = 69$, $23 \times 4 = 92$ and $23 \times 5 = 115$

∴ The first five multiples of 23 are 23, 46, 69, 92 and 115

iii] 65

→ $65 \times 1 = 65$, $65 \times 2 = 130$, $65 \times 3 = 195$, $65 \times 4 = 260$, $65 \times 5 = 325$

∴ The first five multiples of 65 are 65, 130, 195, 260 and 325

iv] 70

→ $70 \times 1 = 70$, $70 \times 2 = 140$, $70 \times 3 = 210$, $70 \times 4 = 280$ and $70 \times 5 = 350$

∴ The first five multiples of 70 are 70, 140, 210, 280 and 350

Q.4. Which of the following numbers are even and which are odd?

i] 32

→ Since 32 is a multiple of 2, it is an even number.

ii] 37

→ Since 37 is not a multiple of 2, it is an odd number.

iii] 50

→ Since 50 is a multiple of 2, it is an even number

iv] 58

→ since 58 is a multiple of 2, it is an even number.

v] 69

→ since 69 is not a multiple of 2 it is an odd number.

vi] 144
→ since 144 is a multiple of 2, it is an even number.

vii] 821
→ since 821 is not a multiple of 2, it is an odd number

viii] 259
→ since 259 is not a multiple of 2, it is an odd number.

Q.5 What are prime numbers? Give ten examples.
→ Prime number: A number is called a prime number if it has only two factors, namely 1 and itself.
Examples: 2, 3, 5, 7, 11, 13, 17, 19, 23 and 29 are prime numbers.

Q.6. Write all the prime numbers between.
i] 10 and 40
→ All prime numbers between 10 & 40 are - 11, 13, 17, 19, 23, 29, 31 & 37.

ii] 80 and 100
→ All prime numbers between 80 & 100 are - 83, 89 and 97.

iii] 40 and 80
→ All prime numbers between 40 & 80 are - 41, 43, 47, 53, 59, 61, 67, 71, 73 and 79

iv] 30 and 40
→ All prime numbers between 30 & 40 are - 31, ~~35, 41, 43~~ and 37.

Q.7. i] Write the smallest prime number.
→ The smallest prime number is 2.

ii] List all even prime number.
→ There is only one even prime number i.e, 2

iii] Write smallest odd prime number.
→ The smallest odd prime number is 3

Q.8 Find which of the following numbers are primes.
i] 87
→ The divisors of 87 are 1, 3, 29 and 87 i.e, 87 has more than 2 factors. Therefore, 87 is not a prime number.

ii] 89.
→ The divisors of 89 are 1 and 89. Therefore, 89 is a prime number.

iii] 63
→ The divisors of 63 are 1, 3, 7, 9, 21 and 63 i.e 63 has more than 2 factors. Therefore, 63 is not a prime number.

iv] 91
→ The divisors of 91 are 1, 7, 13 and 91 i.e 91 has more than 2 factors. Therefore, 91 is not a prime number.

Q.9 Make a list of seven consecutive numbers, none of which is prime
→ 90, 91, 92, 93, 94, 95 and 96 are seven consecutive numbers and none of them is prime.

Q.10 i] Is there any counting number having no factor at all?
→ No, there are no counting number with no factors at all because every number has at least two factors i.e., 1 and itself.

ii] Find all numbers having exactly one factor.
→ There is only one Number that has exactly one factor i.e. 1.

iii] And the numbert between 1 and 100 having exactly three factors.

→ The numbers between 1 and 100 that have exactly three factors are=4, 9, 25 and 49.

Q11. What are composite numbers? Can a composite number be odd? If yes, write the smallest odd composite number.

→ Numbers having more than two factors are called composite number. yes, composite number be odd. 9 is smallest odd Composite number.

Q 12. What are twin primes? Write all the pairs of twin primes between 50 and 100.

→ Two consecutive odd prime numbers are called twin primes.
The pairs of twin primes between 50 to 100 are [59, 61] & [71, 73]

Q13. What are co-primes? Give examples of five pairs of co-primes. Are co-primes always primes? If no, illustrate your answer by an example.

→ If do numbers do not have a common factor other than 1, they are said to be co-primes.
Five pairs of co-primes i] 2 & 3 ii] 3 & 4 iii] 4 & 5 iv] 4 and 9 v] 8 & 15
No, co-primes are not primes.
for Example 3 and 4 are co-primes numbers, where 3 is a prime number and 4 is not a prime number.

Q.14 Express each of the following numbers as the sum of two odd primes

a] 36

→ 36 as the sum of two odd primes numbers is [36 = 31 + 5]

b] 42

→ 42 as the sum of two odd prime numbers is [42 = 31 + 11]

c] 84

→ 84 as the sum of two odd prime numbers is [84=41+43]

d] 98

→ 98 as the sum of two odd prime numbers is [98=31+67]

Q.15 Express each of the ~~sum~~ following odd numbers as the sum of three odd prime numbers:

i] 31

→ 31 can be expressed as the sum of three odd prime numbers as [31=5+7+19]

ii] 35

→ 35 can be expressed as the sum of three odd prime numbers as [35=17+13+5]

iii] 49

→ 49 can be expressed as the sum of three odd prime numbers as [49=13+17+19.

iv] 63

→ 63 can be expressed as the sum of three odd prime number as [63=29+31+3]

Q.16. Express each of the following numbers as the sum of twin primes:

i] 36

→ 36 can be expressed as the sum of twin primes as [36=17+19]

ii] 84

→ 84 can be expressed as the sum of twin primes as [84=41+43]

iii] 120

→ 120 can be expressed as the sum of twin primes as [120 = 59 + 61]

iv] 144.

→ 144 can be expressed as the sum of twin primes as [144 = 71 + 73]

Q.19 Which of the following statements are true?

i] 1 is the smallest prime number.

→ false. 2 is the smallest prime number.

ii] If a number is prime, it must be odd.

→ false. 2 is even prime number.

iii] The sum of two prime numbers is always a prime number.

→ false. 3 and 7 are two prime numbers and their sum is 10. Which is even.

iv] If two numbers are co-primes, at least one of them must be a prime number.

→ false. 4 and 9 are co-primes but neither of them is a prime number.

* Prime number and Composite number.

Prime Numbers	Composite Numbers.
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.	4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 28, 30, 32, 33, 34, 35, 36, 38, 39, 40, 42, 44, 45, 46, 48, 49, 50, 51, 52, 54, 55, 56, 57, 58, 60, 62, 63, 64, 65, 66, 68, 69, 70, 72, 74, 75, 76, 77, 78, 80, 81, 82, 84, 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96, 98, 99, 100.