RD SHARMA

Solutions

Class 10 Maths

Chapter 1

Ex 1.3

Q.1: Express each of the following integers as a product of its prime.

1. 420

2. 468

3. 945

4. 7325

Sol:

To express: each of the following numbers as a product of their prime factors

1. 420

420 = 2 x 2 x 3 x 5 x 7

2. 468

468 = 2 x 2 x 3 x 3 x 13

3. 945

945 = 3 x 3 x 3 x 5 x 7

4. 7325

7325 = 5 x 5 x 293

Q.2: Determine the prime factorization of each of the following positive integer :

1. 20570

2. 58500

3. 45470971

Sol:

TO EXPRESS: each of the following numbers as a product of their prime factors.

1. 20570

20570 = 2 x 5 x 11 x 11 x 17

2. 58500

$58500 = 2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 5 \times 13$

3. 45470971

$45470971 = 7 \times 7 \times 13 \times 13 \times 17 \times 17 \times 19$

Q.3: Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers.

Sol:

Explanation:

Why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers.

We can see that both the numbers have common factor 7 and 1.

$7 \times 11 \times 13 + 13 = (77 + 1) \times 13 = 78 \times 13$

$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5 = (7 \times 6 \times 4 \times 3 \times 2 + 1) \times 5 = 1008 \times 5$

And we know that composite numbers are those numbers which have at least one more factor other than 1.

Hence after simplification we see that both numbers are even and therefore the given two numbers are composite numbers

Q.4: Check whether 6^n can end with the digit 0 for any natural number n.

Sol:

TO CHECK: Whether 6^n can end with the digit 0 for any natural number n.

We know that $6^n = (2 \times 3)^n$

$6^n = 2^n \times 3^n$

Therefore, prime factorization of 6^n does not contain 5 and 2 as a factor together. Hence 6^n can never end with the digit 0 for any natural number n.