Real Numbers

MyBuddyTutor
YOUR LIVE ONLINE TUTOR

EXERCISE 1.2

1) Express each number as product of its prime factors:
   i. 140
   ii. 156
   iii. 3825
   iv. 5005
   v. 7429

Answer:

i. $140 = 2 \times 2 \times 5 \times 7 = 2^2 \times 5 \times 7$
ii. $156 = 2 \times 2 \times 3 \times 13 = 2^2 \times 3 \times 13$
iii. $3825 = 3 \times 3 \times 5 \times 5 \times 17 = 3^2 \times 5^2 \times 17$
iv. $5005 = 5 \times 7 \times 11 \times 13$
v. $7429 = 17 \times 19 \times 23$

2) Find the LCM and HCF of the following pairs of integers and verify that LCM X HCF = product of the two numbers.
   i. 26 and 91
   ii. 510 and 92
   iii. 336 and 54

Answer:

i. $26 = 2 \times 13$
$91 = 7 \times 13$
HCF = 13
LCM = $2 \times 7 \times 13 = 182$
Product of two numbers $26 \times 91 = 2366$
Product of HCF and LCM $13 \times 182 = 2366$
Hence, product of two numbers = product of HCF x LCM

ii. $510 = 2 \times 3 \times 5 \times 17$
$92 = 2 \times 2 \times 23$
HCF = 2
LCM = $2 \times 2 \times 3 \times 5 \times 17 \times 23 = 23460$
Product of two numbers $510 \times 92 = 46920$
Product of HCF and LCM $2 \times 23460 = 46920$
Hence, product of two numbers = product of HCF x LCM

iii. 336 = 2 x 2 x 2 x 2 x 3 x 7
54 = 2 x 3 x 3 x 3
HCF = 2 x 3 = 6
LCM = 2 x 2 x 2 x 2 x 3 x 3 x 3 x 7 = 3024
Product of two numbers 336 x 54 = 18144
Product of HCF and LCM 6 x 3024 = 18144
Hence, product of two numbers = product of HCF x LCM

3) Find the LCM and HCF of the following integers by applying the prime factorization method.
i. 12, 15 and 21
ii. 17, 23 and 29
iii. 8, 9 and 25

ANSWER:

i. 12 = 2 x 2 x 3
15 = 3 x 5
21 = 3 x 7
HCF = 3
LCM = 2 x 2 x 3 x 7 = 420
ii. 17 =1 x 17
23 = 1 x 23
29 = 1 x 29
HCF =1
LCM = 1 x 17 x 19 x 23 = 11339
iii. 8 = 1 x 2 x 2 x 2
9 = 1 x 3 x 3
25 = 1 x 5 x 5
HCF = 1
LCM = 1 x 2 x 2 x 2 x 3 x 3 x 5 x 5 = 1800

4) Given that HCF (306,657) = 9, Find LCM (306, 657).

ANSWER:

We have the formula that, Product of LCM and HCF = product of number

LCM x 9 = 306 x 657

LCM = $\frac{306 \times 657}{9}$ = 22338

5) Check whether 6n can end with the digit 0 for any natural number n.

ANSWER:

If any digit has the last digit 10 that means it is divisible by 10 and the factors of 10 = 2 x 5. So value 6n should be divisible by 2 and 5 both. 6n is divisible by 2 but not divisible by 5 . So, it can not end with 0.

6) Explain why 7 x 11 x 13 +13 and 7 x 6 x 5 x 4 x 3 x 2 x 1 + 5 are compositive numbers

ANSWER:

7 x 11 x 13 + 13

Taking 13 common, we get

13 (7 x 11 +1)

13 (77 + 1)

13 (78)

It is product of two numbers and both numbers are more than 1 so it is a composite numbers.

7 x 6 x 5 x 4 x 3 x 2 x 1 + 5

Taking 5 common, we get

5 (7 x 6 x 4 x 3 x 2 x 1 +1)

5(1008 + 1)

5(1009)

It is product of two numbers and both numbers are more than 1 so it is a composite number

7) There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. After how many minutes will they meet again at the starting point?

ANSWER:

They will be meeting again after LCM of both the values at the starting point.

18 = 2 x 3 x 3

12 = 2 x 2 x 3

LCM = 2 x 2 x 3 x 3 = 36

Therefore, they will meet together at the starting point after 36 minutes.