# MATH-O-MANIA

## Exercise 1.2 (Real Numbers)

**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 × 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 $13 \times 182 = 2366$

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Abhishek Dangayach                                                     Aayush Dangayach
8740060609                                                             9529238688

D-2 Mukherji Colony Shastri Nagar, Jaipur

Hence, product of two numbers = product of HCF × LCM

(ii) 510 = 2 × 3 × 5 × 17

92 =2 × 2 × 23

HCF = 2

LCM =2 × 2 × 3 × 5 × 17 × 23 = 23460

Product of two numbers 510 × 92 = 46920

Product of HCF and LCM 2 × 23460 = 46920

Hence, product of two numbers = product of HCF × LCM

(iii) 336 = 2 × 2 × 2 × 2 × 3 × 7

54 = 2 × 3 × 3 × 3

HCF = 2 × 3 = 6

LCM = 2 × 2 × 2 × 2 × 3 × 3 × 3 × 7 =3024

Product of two numbers 336 × 54 =18144

Product of HCF and LCM 6 × 3024 = 18144

Hence, product of two numbers = product of HCF × 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

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Abhishek Dangayach                                                         Aayush Dangayach
8740060609                                                                      9529238688
                        D-2 Mukherji Colony Shastri Nagar, Jaipur

(i) 12 = 2 × 2 × 3

15 = 3 × 5

21 = 3 × 7

HCF = 3

LCM = 2 × 2 × 3 × 5 × 7 = 420


(ii) 17 = 1 × 17

23 = 1 × 23

29 = 1 × 29

HCF = 1

LCM = 1 × 17 × 19 × 23 = 11339


(iii) 8 = 1 × 2 × 2 × 2

9 = 1 × 3 × 3

25 = 1 × 5 × 5

HCF = 1

LCM = 1 × 2 × 2 × 2 × 3 × 3 × 5 × 5 = 1800


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

Answer

Using the property of HCF and LCM,

Product of LCM and HCF = product of number

LCM × 9 = 306 × 657

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Abhishek Dangayach                                                          Aayush Dangayach
8740060609                                                                      9529238688
D-2 Mukherji Colony Shastri Nagar, Jaipur

Divide both side by 9 we get

LCM = (306 × 657) / 9 = 22338

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

Answer

If any digit has last digit 10 that means it is divisible by 10 and the factors of 10 = 2 × 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 × 11 × 13 + 13 and 7 × 6 × 5 × 4 × 3 × 2 × 1 + 5 are composite numbers.**

Answer

7 × 11 × 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 number.

7 × 6 × 5 × 4 × 3 × 2 × 1 + 5

Taking 5 common, we get

5(7 × 6 × 4 × 3 × 2 × 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.

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Abhishek Dangayach                                      Aayush Dangayach
8740060609                                                    9529238688

D-2 Mukherji Colony Shastri Nagar, Jaipur

**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 meet again after LCM of both values at the starting point.

18 = 2 × 3 × 3

12 = 2 × 2 × 3

LCM = 2 × 2 × 3 × 3 = 36

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

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Abhishek Dangayach                                                                Aayush Dangayach
8740060609                                                                              9529238688

D-2 Mukherji Colony Shastri Nagar, Jaipur