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(Affiliated to CBSE up to +2 Level)

CLASS:10TH

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SUB.:MATHEMATICS

Real Numbers Class 10 Extra Questions Short Answer Type 2

Question 1.An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?

Solution:For the maximum number of columns, we have to find the HCF of 616 and 32.

Now, since $616 > 32$, we apply division lemma to 616 and 32.

We have, $616 = 32 \times 19 + 8$

Here, remainder $8 \neq 0$. So, we again apply division lemma to 32 and 8.

We have, $32 = 8 \times 4 + 0$

Here, remainder is zero. So, HCF (616, 32) = 8

Hence, maximum number of columns is 8.

Question 2.Find the LCM and HCF of 12, 15 and 21 by applying the prime factorisation method.

Solution:The prime factors of 12, 15 and 21 are

$12 = 2^2 \times 3$, $15 = 3 \times 5$ and $21 = 3 \times 7$

Therefore, the HCF of these integers is 3.

2^2 , 3^1 , 5^1 and 7^1 and are the greatest powers involved in the prime factors of 12, 15 and 21.

So, $\text{LCM}(12, 15, 21) = 2^2 \times 3^1 \times 5^1 \times 7^1 = 420$.

Question 3.Find the LCM and HCF of the following pairs of integers and verify that $\text{LCM} \times \text{HCF} = \text{product of the two numbers}$.

(1) 26 and 91

(ii) 198 and 144

Solution:(i) We have, $26 = 2 \times 13$ and $91 = 7 \times 13$

Thus, $\text{LCM}(26, 91) = 2 \times 7 \times 13 = 182$ $\text{HCF}(26, 91) = 13$

Now, $\text{LCM}(26, 91) \times \text{HCF}(26, 91) = 182 \times 13 = 2366$

and Product of the two numbers = $26 \times 91 = 2366$

Hence, $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$.

Question 4. 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 from 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?

Solution:

To find the time after which they meet again at the starting point, we have to find LCM of 18 and 12 minutes. We have

$$\begin{array}{r|l} 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

Therefore, LCM of 18 and 12 = $2^2 \times 3^2 = 36$
So, they will meet again at the starting point after 36 minutes.

Question 5. Write down the decimal expansions of the following numbers:

(i) 3550

(ii) 151600

Solution:

(i)

$$\begin{aligned} \text{We have, } \frac{35}{50} &= \frac{35}{5^2 \times 2} = \frac{35 \times 2}{5^2 \times 2 \times 2} = \frac{70}{5^2 \times 2^2} \\ &= \frac{70}{10^2} = \frac{70}{100} = 0.70 \end{aligned}$$

(ii)

$$\begin{aligned} \text{We have, } \frac{15}{1600} &= \frac{15}{2^6 \times 5^2} = \frac{15 \times 5^4}{2^4 \times 2^2 \times 5^2 \times 5^4} = \frac{15 \times 625}{2^6 \times 5^6} \\ &= \frac{9375}{10^6} = \frac{9375}{1000000} = 0.009375 \end{aligned}$$