# CLASS NOTES-ANSWERS

## EXERCISE 3.7

1. Renu purchases two bags of fertiliser of weights 75 kg and 69 kg. Find the maximum value of weight which can measure the weight of the fertiliser exact number of times.

Answer:

75 = 3 × 5 × 5

69 = 3 × 23

The common factor of 75 and 69 is 3.Therefore, HCF of 75 and 69 = 3.

Hence, the required maximum value of weight that can measure the given weight an exact number of times is 3 kg.

2. Three boys step off together from the same spot. Their steps measure 63 cm, 70 cm and 77 cm respectively. What is the minimum distance each should cover so that all can cover the distance in complete steps?

Answer:

LCM = 2 × 3 × 3 × 5 × 7 × 11 = 6930

Hence, the minimum distance each should cover so that all can cover the distance in complete steps is 6930 cm.

3. The length, breadth and height of a room are 825 cm, 675 cm and 450 cm respectively. Find the longest tape which can measure the three dimensions of the room exactly.

Answer:

Prime factorization of 825 = 3 × 5 × 5 × 11

Prime factorization of 675 = 3 × 3 × 3 × 5 × 5

Prime factorization of 450 = 2 × 3 × 3 × 5 × 5

HCF of 825, 675, and 450 is 75.

Thus, the length of the longest tape required to measure the three dimensions of the room will be 75 cm.

4. Determine the smallest 3-digit number which is exactly divisible by 6, 8 and 12.

Answer:

The smallest 3-digit number is 100

LCM of 6, 8, and 12 is 2 × 2 ×2 × 3 = 24

The smallest three digit multiple of 24 will be,

100 = (100 – 4) + 24 = 96 + 24 = 120

Hence, the smallest 3-digit number which is exactly divisible by 6, 8, and 12, is 120.



5. Determine the greatest 3-digit number exactly divisible by 8, 10 and 12.

Answer:

LCM of 8, 10, and 12 will be equal to 2 × 2 × 2 × 3 × 5 = 120

The greatest 3-digit number is 999

Now, 120 × 8 = 960 and 120 × 9 = 1080.

We see that 120 × 9 = 1080 is a 4-digit number but, we need the greatest 3-digit multiple.

Therefore, the greatest 3-digit multiple of 120 is 120 × 8 = 960 i.e., 960.

6. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively. If they change simultaneously at 7 a.m., at what time will they change simultaneously again?

Answer:

LCM of 48, 72 and 108 = 2 × 2 × 2 × 2 × 3 × 3 × 3 = 432

Hence, after every 432 seconds, the light will change simultaneously.

Thus, the required time is 432 seconds which can be converted into minutes and seconds as 7 minutes 12 seconds past 7 a.m.

7. Three tankers contain 403 litres, 434 litres and 465 litres of diesel respectively. Find the maximum capacity of a container that can measure the diesel of the three containers exact number of times.

Answer:

403 = 13 × 31

434 = 2 × 7 × 31

465 = 3 × 5 × 31

Here we observe that 31 is the highest common factor of 403, 434 and 465.

Therefore, the maximum capacity of the required container that can measure the diesel of the three containers an exact number of times will be 31 litres.

8. Find the least number which when divided by 6, 15 and 18 leave remainder 5

in each case.

Answer:

LCM of 6, 15 and 18 = 2 × 3 × 3 × 5 = 90.

Thus 90 is the least number exactly divisible by 6, 15, and18.

To get a remainder 5, we need to add 5 to the LCM.

90 + 5 = 95.

Thus, when 95 is divided by 6, 15, and 18 we get a remainder of 5 in each case.

Hence, the required number for the given problem is 95.

9. Find the smallest 4-digit number which is divisible by 18, 24 and 32.

Answer:

LCM of 18, 24 and 32 = 2 × 2 × 2 × 2 × 2 × 3 × 3 = 288

Thus, 288 as the smallest number, which is exactly divisible by 18, 24, and 32.

Since it's not a 4-digit number, we need to find the multiple of 288, close to 1000.

Here we have 136 as the remainder.

Therefore, we need to subtract 136 and add 288 to make the smallest 4 digit number exactly divisible by 18, 24, and 32.

So, the multiple of 288 just above 1000 is:

1000 – 136 + 288 = 1152.

Hence, the smallest 4-digit number which is divisible by 18, 24, and 32 is 1152.

10. Find the LCM of the following numbers :

(a) 9 and 4 (b) 12 and 5 (c) 6 and 5 (d) 15 and 4

Observe a common property in the obtained LCMs. Is LCM the product of two numbers in each case?

Answer:

(a) LCM = 2 × 2 × 3 × 3 = 36

Product of the numbers = 9 × 4 = 36

(b) LCM = 2 × 2 × 3 × 5 = 60

Product of the numbers = 12 × 5 = 60

(c) LCM = 2 × 3 × 5 = 30

Product of the numbers = 6 × 5 = 30

(d) LCM = 2 × 2 × 3 × 5 = 60

Product of the numbers = 15 × 4 = 60

Therefore, we have observed in each case that the LCM of the given numbers is equal to the product of the two numbers given.

11. Find the LCM of the following numbers in which one number is the factor of the other.

(a) 5, 20 (b) 6, 18 (c) 12, 48 (d) 9, 45

What do you observe in the results obtained?

Answer:

(a) LCM = 2 × 2 × 5 = 20

(b) LCM = 2 × 3 × 3 = 18

(c) LCM = 2 × 2 × 2 × 2 × 3 = 48

(d) LCM = 3 × 3 × 5 = 45

Therefore, in each case, the LCM of given numbers is the larger number.Hence, we can generalize the statement by saying that their LCM will be the larger number whenever a number is a factor of the other number.