

For more such worksheets visit www.edugain.com

Choose correct answer(s) from the given choices

- (1) Find the highest common factor (HCF) of 84 and 196 by prime factorization method.
- a. 196 b. 28
c. 56 d. 27
- (2) The *LCM* of two numbers is 456 and their product is 1368. What is the *HCF* of the numbers?
- a. 57 b. 456
c. 3 d. 457

Fill in the blanks

- (3) Ajoy saves 44.9 everyday. The minimum number of days for which he need to save to get his savings as a whole number is .
- (4) The least common multiple (LCM) of 50 and 50 is .
- (5) Find the Least Common Multiple (LCM) of following:
- A) LCM of 45, 360, 45, 18, 50 is . B) LCM of 72, 225, 72, 30, 54 is .
- C) LCM of 18, 160, 10, 32, 10 is . D) LCM of 14, 24, 12 is .
- (6) The *HCF* of two consecutive even numbers is .
- (7) The *HCF* of two co-prime numbers is .
- (8) 3 bells ring at intervals of 50, 20, 45 seconds, respectively. If the bells ring together at 4 o'clock, they will ring together again at : : . The number of times they will ring together in 240 minutes will be .

Answer the questions

- (9) What is the HCF of two distinct prime numbers?
- (10) Meenakshi has two sheets of cloth. One sheet is 504 inches wide and the other sheet is 140 inches wide. She wants to divide the sheets into strips of equal width without wasting any cloth such that they are as wide as possible. How wide should she cut the strips?



© 2021 Edugain (www.edugain.com).
All Rights Reserved

Many more such worksheets can be
generated at www.edugain.com

Solutions

(1) b. 28

Let us find the HCF of 84 and 196:

$$2 \mid 84$$

$$2 \mid 42$$

$$3 \mid 21$$

$$7 \mid 7$$

$$\mid 1$$

$$\text{Factors of } 84 = 2 \times 2 \times 3 \times 7$$

$$2 \mid 196$$

$$2 \mid 98$$

$$7 \mid 49$$

$$7 \mid 7$$

$$\mid 1$$

$$\text{Factors of } 196 = 2 \times 2 \times 7 \times 7$$

The HCF of 84 and 196 is $2 \times 2 \times 7 = \mathbf{28}$.

(2) c. 3

Step 1

Given, the *LCM* of two numbers is 456 and the product is 1368.

Step 2

We know that the product of any two numbers is equal to the product of their *LCM* and *HCF*.

$$\text{Now, } HCF \times LCM = \text{Product of the numbers}$$

$$\implies HCF = \frac{\text{Product of the numbers}}{LCM}$$

$$= \frac{1368}{456}$$

$$= 3$$

Step 3

Hence, the *HCF* of the numbers is 3.

(3) 10**Step 1**

We need to find the number of days after which he will have the exact amount (no decimal).
On observing 44.9, we find that it has two parts, namely,
44 and 0.9

Step 2

The first part 44 multiplied by any number of days will always result in the full amount (no decimal). So, we need not worry about this part.

Step 3

Now, we need to find the least number of days, which when multiplied by 0.9, results in the full amount.

We know that this amount will be a multiple of 1 as well as 0.9. So, the smallest number which is divisible by both 1 and 0.9 will be the L.C.M of 1 and 0.9.

Step 4

Since, we are not taught how to calculate the L.C.M of non-natural numbers, we can first calculate the L.C.M of 100 and 90, and then divide the result by 100.

L.C.M of 100 and 90 = 900

$$\Rightarrow \text{L.C.M of 1 and 0.9} = \frac{900}{100} = 9$$

Step 5

Therefore, the number of days required to save 9, by saving 0.9 daily,

$$= \frac{9}{0.9} = \mathbf{10 \text{ days}}$$

(4) 50

Let us find the LCM of 50 and 50.

$$2 \mid 50, 50$$

$$5 \mid 25, 25$$

$$5 \mid 5, 5$$

$$\mid 1, 1$$

The LCM is = $2 \times 5 \times 5 = 50$.

(5)

A)

1800

Let us find the LCM of 45, 360, 45, 18, 50

2 | 360, 50, 45, 45, 18

2 | 180, 25, 45, 45, 9

2 | 90, 25, 45, 45, 9

3 | 45, 25, 45, 45, 9

3 | 15, 25, 15, 15, 3

5 | 5, 25, 5, 5, 1

5 | 1, 5, 1, 1, 1

| 1, 1, 1, 1, 1

The LCM is = $2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5 = 1800$.

B) 5400

Let us find the LCM of 72, 225, 72, 30, 54

2 | 225, 72, 72, 54, 30

2 | 225, 36, 36, 27, 15

2 | 225, 18, 18, 27, 15

3 | 225, 9, 9, 27, 15

3 | 75, 3, 3, 9, 5

3 | 25, 1, 1, 3, 5

5 | 25, 1, 1, 1, 5

5 | 5, 1, 1, 1, 1

| 1, 1, 1, 1, 1

The LCM is = $2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 5 = 5400$.

C) 1440

Let us find the LCM of 18, 160, 10, 32, 10

2 | 160, 32, 18, 10, 10

2 | 80, 16, 9, 5, 5

2 | 40, 8, 9, 5, 5

2 | 20, 4, 9, 5, 5

2 | 10, 2, 9, 5, 5

3 | 5, 1, 9, 5, 5

3 | 5, 1, 3, 5, 5

5 | 5, 1, 1, 5, 5

| 1, 1, 1, 1, 1

The LCM is = $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 1440$.

D) 168

Let us find the LCM of 14, 24, 12

2 | 24, 14, 12

2 | 12, 7, 6

2 | 6, 7, 3

3 | 3, 7, 3

7 | 1, 7, 1

| 1, 1, 1

The LCM is = $2 \times 2 \times 2 \times 3 \times 7 = 168$.

(6) 2**Step 1**

Remember: The product of all common prime factors of two or more numbers is the *HCF* (Highest Common Factor) of the numbers.

Step 2

The common factor of two consecutive even numbers is always 2.

Let the two consecutive even numbers are 8 and 10.

$$8 = 2 \times 2 \times 2$$

$$10 = 2 \times 5$$

The common factor of 8 and 10 is 2.

Step 3

Hence, the *HCF* of two consecutive even numbers is 2.

(7) 1**Step 1**

Remember: The product of all common prime factors of two or more numbers is the *HCF* (Highest Common Factor) of the numbers.

Step 2

Since, two numbers are co-prime if their common factor is only 1.

Therefore, the *HCF* of two co-prime numbers is 1.

(8)

4

15

00

16

Step 1

The 3 bells ring after intervals of 50, 20, 45 seconds, respectively.

If the first bell rings just now, it will ring again after :

$$50 \times 1 = 50 \text{ seconds}$$

$$50 \times 2 = 100 \text{ seconds}$$

$$50 \times 3 = 150 \text{ seconds}$$

... and so on.

This means the number of seconds after which the 1st bell rings will be a multiple of 50.

Similarly, the number of seconds after which the 2nd and 3rd bells ring will be a multiple of 20 and 45, respectively.

Step 2

This means the number of seconds after which all the 3 bells ring together must be a common multiple of all the 3: 50, 20, 45.

Step 3

We need to find the very first time after 4 o'clock when the 3 bells will ring together. This will happen after a certain number of seconds past 4 O'clock, which is the least common multiple (L.C.M) of 50, 20, 45.

Step 4

The L.C.M of 50, 20, 45 is 900 seconds.

$$900 \text{ seconds in minutes} = \frac{900}{60} = 15 \text{ minutes.}$$

Step 5

Therefore, all the 3 bells will ring together at 15 minutes past 4 o'clock, i.e., at 4:15:00.

Step 6

We just found out that the 3 bells ring together every 15 minutes. Therefore, the number of

$$\text{times they will ring together in 240 minutes} = \frac{240}{15} = \mathbf{16 \text{ times.}}$$

(9) 1

Step 1

Remember: The product of all common prime factors of two or more numbers is the *HCF* (Highest Common Factor) of the numbers.

Step 2

Since, every prime number has only two factors, 1 and the number itself.
Therefore, the common factor of two prime numbers is always 1.

Step 3

Hence, the *HCF* of two distinct prime numbers is 1.

(10) 28 inches

Step 1

Let the width of strip be x inches.

Step 2

Since, no cloth should be wasted, 504 inches should be divisible by x inches.
Similarly, 140 inches should be divisible by x inches.

Step 3

Also, we should remember that x has to be as large as possible.
Therefore, x should be the HCF of 504 and 140.

Step 4

Hence, $x = \text{HCF}(504, 140) = \mathbf{28 \text{ inches}}$.

