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# HCF & LCM

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CONCEPT      LCM      HCF =  $\infty$   
                          HCF      LCF = 1

### L.C.M and HCF Important Formulas

- Product of two numbers (First number  $\times$  Second Number) = H.C.F.  $\times$  L.C.M.
- H.C.F. of a given number always divides its L.C.M.
- To find the **greatest number** that will exactly divide  $x$ ,  $y$  and  $z$ . Required number = **HCF** of  $x$ ,  $y$  and  $z$
- To find the **Largest number** that will divide  $x$ ,  $y$  and  $z$  leaving remainders  $a$ ,  $b$  and  $c$  respectively.  
 Required number = **HCF** of  $(x - a)$ ,  $(y - b)$  and  $(z - c)$
- To find the least number which is exactly divisible by  $x$ ,  $y$  and  $z$ . Required number = LCM of  $x$ ,  $y$  and  $z$
- To find the **least number** which when divided by  $x$ ,  $y$  and  $z$  leaves the remainders  $a$ ,  $b$  and  $c$  respectively. It is always observed that,  $(x - a) = (y - b) = (z - c) = K$  (say). Required number = (**LCM** of  $x$ ,  $y$  and  $z$ )  $- K$ .
- To find the least number which, when divided by  $x$ ,  $y$  and  $z$  leaves the same remainder  $r$  in each case.  
 Required number = (LCM of  $x$ ,  $y$  and  $z$ )  $+ r$
- To find the greatest number that will divide  $x$ ,  $y$  and  $z$  leaving the same remainder ' $r$ ' in each case.  
 Required number = HCF of  $(x - r)$ ,  $(y - r)$  and  $(z - r)$
- Largest number which divides  $x$ ,  $y$ ,  $z$  to leave same remainder = H.C.F. of  $(y - x)$ ,  $(z - y)$ ,  $(z - x)$ .
- HCF of two prime numbers is always 1.

I. Find the greatest number that will divide 43, 91 and 183 so as to leave the same remainder in each case.

☒ A. 4

B. 7

C. 9

D. 13

$$91 - 43 = 48$$

$$183 - 91 = 92$$

$$183 - 43 = 140$$

4		48, 92, 140
		12, 23, 35

2. The H.C.F. of two numbers is 23 and the other two factors of their L.C.M. are 13 and 14. The larger of the two numbers is:

A. 276

B. 299

✓ ~~C. 322~~

D. 345

$$HCF = 23$$

$$LCM = 23 \times 13 \times 14$$

**3. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together?**

A. 4

B. 10

C. 15

✓ D. 16

$$\text{LCM}(2, 4, 6, 8, 10, 12) = 120 \text{ sec}$$

0, 2, 4, 6, 8, 10 - - - 30

1 + (15)

(16)

4. Let N be the greatest number that will divide 1305, 4665 and 6905, leaving the same remainder in each case. Then sum of the digits in N is:

✓ A. 4

B. 5

C. 6

D. 8

10	3360, 2240, 5600
4	336, 224, 560
4	84, 56, 140
7	21, 14, 35
	3, 2, 5

$$4665 - 1305 = 3360$$

$$6905 - 4665 = 2240$$

$$6905 - 1305 = 5600$$

$$HCF = 10 \times 4 \times 4 \times 7$$

$$= 1120$$

$$1 + 1 + 2 + 0 = \underline{\underline{4}}$$

**5. Three numbers are in the ratio of 3 : 4 : 5 and their L.C.M. is 2400. Their H.C.F. is:**

**A. 40**

**B. 80**

**C. 120**

**D. 200**

**6. Find the greatest number that will divide 148, 246 and 623 leaving remainders 4, 6 and 11 respectively.**

A. 20

B. 12

C. 8

D. 48



# ANSWER KEY

QUESTION	ANSWER
1	A
2	C
3	D
4	A
5	A
6	B