

- I. To enhance the reading skills of grade X students, the school nominates you and two of your friends to set up a class library. There are two sections — section A and section B of grade X. There are 32 students in section A and 36 students in section B.



- What is the minimum number of books you will acquire for the class library, so that they can be distributed equally among students of section A or section B?
 (a) 144 (b) 128 (c) 288 (d) 272
- If the product of two positive integers is equal to the product of their HCF and LCM is true then, the HCF (32, 36) is:
 (a) 2 (b) 4 (c) 6 (d) 8
- 36 can be expressed as a product of its primes as:
 (a) $2^2 \times 3^2$ (b) $2^1 \times 3^3$ (c) $2^3 \times 3^1$ (d) $2^0 \times 3^0$
- $7 \times 11 \times 13 \times 15 + 15$ is a:
 (a) Prime number (b) Composite number
 (c) Neither prime nor composite (d) None of the above
- If p and q are positive integers such that $p = ab^2$ and $q = a^2b$, where a, b are prime numbers, then the LCM (p, q) is
 (a) ab (b) a^2b^2 (c) a^3b^2 (d) a^3b^3

- II. Traffic Lights (or traffic signals) are lights used to control movement of traffics. They are installed on roads at intersections and crossings. The different colours of light tell drivers what to do. The traffic lights at different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively.



- 108 can be expressed as a product of its primes as
 (a) $2^3 \times 3^2$ (b) $2^3 \times 3^3$
 (c) $2^2 \times 3^2$ (d) $2^2 \times 3^3$
- The HCF of 48, 72, 108 is
 (a) 18 (b) 16 (c) 12 (d) 10
- The LCM of 48, 72, 108 is
 (a) 520 (b) 432 (c) 396 (d) 420
- If all the traffic lights change simultaneously at 8:20:00 hrs, they will again change simultaneously at
 (a) 8:27:12 hrs (b) 8:32:24 hrs (c) 8:40:08 hrs (d) 8:24:24 hrs
- The [HCF \times LCM] for the numbers 48, 72, 108 is
 (a) 2472 (b) 3680 (c) 4090 (d) 5184

X Test-2 Case-Studies

1. (i) $32 = 2^5$

$36 = 2^2 \times 3^2$

LCM = $2^5 \times 3^2 = 32 \times 9 = 288$ books (c)

(ii) HCF = $2^2 = 4$ (b)

(iii) $2^2 \times 3^2$ (a)

(iv) Composite number (b)

(v) LCM = $a^2 b^2$ (b)

2 (i) $48 = 2^4 \times 3$

$72 = 2^3 \times 3^2$

$108 = 2^2 \times 3^3$ (d)

$2 \overline{)48}$	$2 \overline{)72}$	$2 \overline{)108}$
$2 \overline{)24}$	$2 \overline{)36}$	$2 \overline{)54}$
$2 \overline{)12}$	$2 \overline{)18}$	$3 \overline{)27}$
$2 \overline{)6}$	$3 \overline{)9}$	$3 \overline{)9}$
3	3	3

(ii) HCF = $2^2 \times 3 = 12$ (c)

(iii) LCM = $2^4 \times 3^3 = 16 \times 27 = 432$ (b)

(iv) $432 \text{ seconds} = \frac{432}{60} \text{ min}$

$$\begin{array}{r} 7 \\ 60 \overline{)432} \\ \underline{420} \\ 12 \end{array}$$

$8:27:12 \text{ hrs}$ (a)

(v) $12 \times 432 = 5184$ (d)