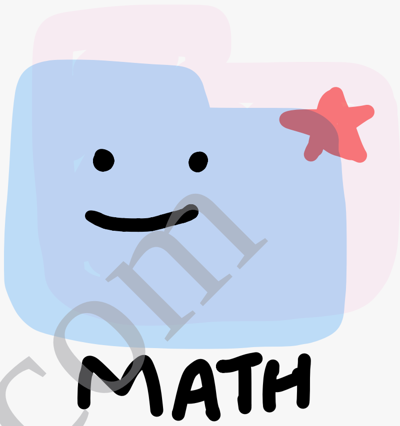
Real Numbers
Ex. 1.2



$+ \quad \times$

$- \quad \div$

Ex. 1.2

1. (i) $140 = 2^2 \times 5 \times 7$

(ii) $156 = 2^2 \times 3 \times 13$

(iii) $3825 = 3^2 \times 5^2 \times 17$

(iv) $5005 = 5 \times 7 \times 11 \times 13$

(v) $7429 = 17 \times 19 \times 23$

2. (i) $26 = 2 \times 13$

$91 = 7 \times 13$

HCF = 13

LCM = $2 \times 7 \times 13$

= 182

LCM × HCF = 13×182 = 2366

Product of numbers = 26×91 = 2366

∴ LCM × HCF = Product of numbers

(ii) $510 = 2 \times 3 \times 5 \times 17$

$92 = 2^2 \times 23$

HCF = 2

LCM = $2^2 \times 3 \times 5 \times 17 \times 23$ = 23460

LCM × HCF = 23460×2 = 46920

Product of numbers = 510×92 = 46920

∴ LCM × HCF = Product of numbers

(iii) $336 = 2^4 \times 3 \times 7$

$54 = 2 \times 3^3$

HCF = 2×3 = 6

LCM = $2^4 \times 3^3 \times 7$ = 3024

LCM × HCF = 3024×6 = 18144

Product of numbers = 336×54 = 18144

$\therefore$ LCM × HCF = Product of numbers

3 (i) $12 = 2^2 \times 3$

$15 = 3 \times 5$

$21 = 3 \times 7$

HCF = 3

LCM = $2^2 \times 3 \times 5 \times 7 = 420$

(ii) $17 = 17 \times 1$

$23 = 23 \times 1$

$29 = 29 \times 1$

HCF = 1

LCM = $17 \times 23 \times 29 = 11339$

(iii) $8 = 2^3 \times 1$

$9 = 3^2 \times 1$

$25 = 5^2 \times 1$

HCF = 1

LCM = $2^3 \times 3^2 \times 5^2$

$= 1800$

4. HCF (306, 657) = 9

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

$$= \frac{\overset{34}{\cancel{306}} \times 657}{\cancel{9}\ 1}$$

$= 22338$

5. If the number 6^n, for any 'n', were to end with the digit zero, then it would be divisible by 5. That is, the prime factorisation of 4^n would contain the prime 5. This is not possible because $6^n = (2 \times 3)^n = 2^n \times 3^n$. So, the uniqueness of Fundamental Theorem of Arithmetic guarantees that there are no other primes in the factorisation of 6^n. So, there is no natural number 'n' for which 6^n ends with the digit zero.

6. $7 \times 11 \times 13 + 13$

$= 13(7 \times 11 + 1)$

$= 13 \times 78$

$= 13 \times 13 \times 3 \times 2$

Since there are more than two factors, therefore $7 \times 11 \times 13 + 13$ is a composite number.

$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$

$= 5(7 \times 6 \times 4 \times 3 \times 2 + 1)$

$= 5(1008 + 1)$

$= 5 \times 1009 \times 1$

Since there are more than two factors, therefore $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ is a composite number.

7. Time taken by Sonia for one round = 18 minutes

Time taken by Ravi for one round = 12 minutes

The time when they meet again at the starting point is the LCM of 18 and 12.

$18 = 2 \times 3^2$

$12 = 2^2 \times 3$

$LCM = 2^2 \times 3^2$

$= 36$

$\therefore$ Sonia and Ravi meet again at the starting point after 36 minutes.