HW
28.6.21

Ex- 8(C)

(1) i) 8, 12 and 24

8 = 8, 16, (24), 32, 40, (48), 56, 64, 72, 80
12 = 12, (24), 36, (48), 60, 72, 84, 96, 108, 120
24 = 24, (48), 72, 96, 120, 144, 168, 192, 216, 240

Common multiple = 24, 48
LCM = 24

ii) 10, 15 and 20

10 = 10, 20, 30, 40, 50, (60), 70, 80, 90, 100
15 = 15, 30, 45, (60), 75, 90, 105, 120, 135, 150
20 = 20, 40, (60), 80, 100, 120, 140, 160, 180, 200

Common multiple = 60
LCM = 60

iii) 3, 6, 9 and 12

3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36
6 = 6, 12, 18, 24, 30, 36, 42, 48, 60
9 = 9, 18, 27, 36, 45, 54, 63, 72, 81, 90
12 = 12, 24, 36, 48, 60, 72, 84, 96, 108, 120
LCM = 36

(2) The prime factore method

i) 18, 24, 96

$18 = 2 \times 3 \times 3$
$= 2^1 \times 3^2$
$24 = 2 \times 3 \times 2 \times 2$
$= 2^3 \times 3^1$

$96 = 2 \times 3 \times 2 \times 2 \times 2 \times 2$

$2^5 \times 3^1$

LCM $= 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 288$

b.

Common division method

18, 24 and 96

=	2	18, 24, 96
	2	9, 12, 48
	2	9, 6, 24
	3	9, 3, 12
		3, 1, 4

LCM $= 2 \times 2 \times 2 \times 3 \times 3 \times 4 = 288$

ii) Prime factor method

100, 150 and 200

$100 = 2 \times 2 \times 5 \times 5 = 2^2 \times 5^2$

$150 = 2 \times 3 \times 5 \times 5 = 2^1 \times 3^1 \times 5^2$

$200 = 2 \times 2 \times 2 \times 5 \times 5 = 2^3 \times 5^2$

So, LCM $= 2^3 \times 3^1 \times 5^2 = 2 \times 2 \times 2 \times 3 \times 5 \times 5 = 600$

Common division method

2	100, 150, 200
2	50, 75, 100
5	25, 75, 50
5	5, 15, 10
	1, 3, 2

LCM $= 2 \times 2 \times 5 \times 5 \times 3 \times 2 = 600$

iii) Prime factor method

$14 = 2 \times 7 = 2^1 \times 7^1$

$21 = 3 \times 7 = 3^1 \times 7^1$

$98 = 2 \times 7 \times 7 = 2^1 \times 7^2$

So, LCM $= 2^1 \times 3^1 \times 7^2 = 2 \times 3 \times 7 \times 7 = 294$

Common division method

14, 21, 98

2	14, 21, 98
7	7, 21, 49
	1, 3, 7

LCM $= 2 \times 7 \times 3 \times 7 = 294$

Prime factor method

iv) 22, 121, 33

$22 = 2 \times 11 = 2^1 \times 11^1$

$121 = 11 \times 11 = 11^2$

$33 = 3 \times 11 = 3^1 \times 11^1$

So LCM $= 2^1 \times 3^1 \times 11^2 = 2 \times 3 \times 11 \times 11 = 726$

Common division method :

11	22, 121, 33
	2, 11, 3

LCM $= 11 \times 2 \times 11 \times 3 = 726$

v.) Prime factor method

34, 85, 51

$34 = 2 \times 17 = 2^1 \times 17^1$

$85 = 5 \times 17 = 5^1 \times 17^1$

$51 = 3 \times 17 = 3^1 \times 17^1$

So, LCM $= 2^1 \times 5^1 \times 3^1 \times 17^1 = 2 \times 5 \times 3 \times 17 = 510$

Common division method

17	34, 85, 51,
	2, 5, 3

LCM $= 17 \times 2 \times 5 \times 3 = 510$

(3.) The HCF = 50
The LCM = 300
One of the ~~products~~ number = 150
The other number =

$$\frac{\text{HCF} \times \text{LCM}}{\text{~~Product~~ The other number}} = \frac{15000}{150} = 100$$

⇒ So, the other number is 100.

(4.) The product of two numbers = 432
Their LCM = 72
HCF =

```
      6
72 | 432 | 6
   -432
   ----
     0
```

The HCF is 6.

(5.) The product of two numbers = 19,200
Their HCF = 40

```
        4 80
40 | 19,200 |
   -16,0 ↓
   -------
     3 20
   - 3 20 ↓
   -------
       00
     -  0
     ----
        0
```

LCM = So the LCM is 480.

(6.)

```
3 | 12, 15, 18, 24, 36
2 | 4, 5, 6, 8, 12
2 | 2, 5, 3, 4, 6
3 | 1, 5, 3, 2, 3
    1, 5, 1, 2, 1
```

⇒ The smallest number which when divided by 12, 15, 18, 24 and 36 leaving no remainder is 360.

LCM = 3 × 2 × 2 × 5 × 3 × 2 = ~~1080~~ 360

(7.)

2	12, 18, 24, 32, 40
2	6, 9, 12, 16, 20
2	3, 9, 6, 8, 10
3	3, 9, 3, 4, 5
	1, 3, 1, 4, 5

$2 \times 2 \times 2 \times 3 \times 3 \times 4 \times 5 = 1440$

$\therefore$ LCM = 1440

The smallest number which when increased by one is exactly divisible by 12, 18, 24, 32 and 40 = LCM − 1

= 1440 − 1 = 1439.

(8.) LCM of 18, 36, 32 and 27

2	18, 36, 32, 27
2	9, 18, 16, 27
3	9, 9, 8, 27
3	3, 3, 8, 9
	1, 1, 8, 3

LCM = $2 \times 2 \times 3 \times 3 \times 8 \times 3 = 864$

The smallest number which, on being decreased by 3, will be divisible by 18, 36, 32 and 27 = LCM + 3

= 864 + 3 = 867 !