HW
23/6/21

Ex- 8'C'

1) i) 8, 12, 24

ans) M_8 = 8, 16, (24), 32, 40, (48), 56.....
M_{12} = 12, (24), 36, (48).....
M_{24} = (24), (48).....
LCM = ~~48~~ 24

ii) 10, 15, 20

ans) M_{10} = 10, 20, 30, 40, 50, (60).....
M_{15} = 15, 30, 45, (60), 75.....
M_{20} = 20, 40, (60), 80....
LCM = 60

iii) 3, 6, 9, 12

ans) M_3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, (36)....
M_6 = 6, 12, 18, 24, 30, (36), 42....
M_9 = 9, 18, (36).....
~~LCM = 36~~ M_{12} = 12, 24, (36).....
LCM = 36

2) i) 18, 24, 96
ans) by 'prime factor method':
18 = ~~18, 36~~, 2 x 3 x 3
24 = 2 x 2 x 2 x 3
96 = ~~2~~ x 2 x 2 x 2 x 3
LCM = 2 x 2 x 2 x 2 x 2 x 3 x 3 = 288

by common division method:

2 | 18, 24, 96	LCM = 2 x 2 x 2 x 3 x 3 x 4
3 | 9, 12, 48	= 288
2 | 3, 4, 16	
3 | 9, 3, 12	
	3, 1, 4

ii) 100, 150, 200

ans) by prime factor method:

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

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

$200 = 2 \times 2 \times 2 \times 5 \times 5$

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

by common division method:

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

$LCM = 2 \times 2 \times 5 \times 5 \times 1 \times 3 \times 2$

$= 600$

iii) 14, 21, 98

ans) by prime factor method:

$14 = 2 \times 7$

$21 = 3 \times 7$

$98 = 2 \times 7 \times 7$

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

by common division method:

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

$LCM = 2 \times 7 \times 3 \times 7 \times 1 = 294$

iv) 22, 121, 33

ans) by prime factors method:
22 = 2 X 11
121 = 11 X 11
33 = 3 X 11
LCM = 2 X 3 X 11 X 11 = 726
by common division method:

11	22, 121, 33
	2, 11, 3

LCM = 11 X 2 X 11 X 3
= 726

v) 34, 85, 51

ans) by prime factors method:
34 = 2 X 17
85 = 5 X 17
51 = 3 X 17
LCM = 2 X 5 X 3 X 17 = 510

by common division method:

17	34, 85, 51
	2, 5, 3

LCM = ~~34~~ X 17 X 5 X 3 X2 = 510

3) ans) H.C.F = 50
L.CM = 300
One number = 150
We know that, Product of H.C.F and L.C.M of two no.s is equal to the product of those two.
∴ 50 X 300 = 150 X other number
= 15000 / 150 = other no.
= 100

Hence, the other number is 100.

ans/4) Product of two numbers = 432
Their LCM = 72
We know that, Product of H.C.F and L.C.M of two numbers is equal to product of those two numbers.
Now, to find the HCF we will divide the product of the nos by their L.C.M.

∴ HCF = 432/72
HCF = 6
Hence, the HCF is 6

5/ans) Given, Products of two numbers = 19200
Their H.C.F. = 40
We know that, Product of H.C.F and L.C.M of two nos is equal to product of those two nos.
So, hence, 40 × L.C.M = 19200
Now, to find the LCM we will divide 19200 by 40.

∴ 19200 ÷ 40 = LCM
= 480
Hence, the LCM is 480.

6/ans) The given numbers LCM will be the least number which is exactly divisible by 12, 15, 18, 21 and 36 and leaves no remainder.

nos.

2	12, 15, 18, 24, 36
2	6, 15, 9, 12, 18
3	3, 15, 9, 6, 9
3	1, 5, 3, 2, 3
2	1, 5, 1, 2, 1
5	1, 5, 1, 1, 1
	1, 1, 1, 1, 1

LCM = 2 × 2 × 3 × 3 × 2 × 5

= 360

Hence, smallest required no. = 360

7) ans) First, let us find outs the L.C.M of 12, 18, 24, 32 and 40

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

LCM = 2 × 2 × 2 × 2 × 2 × 3 × 3 × 5

= 1440

This can be written as

= 1439 + 1

Hence, 1439 is the smallest number which when increased by one is exactly divisible by the given numbers.

8) ans: First, let us solve for LCM of 18, 36, 32 and 27.

3	18, 36, 32, 27
2	9, 18, 16, 27
2	9, 9, 8, 27
2	9, 9, 4, 27
3	9, 9, 2, 27
3	9, 9, 1, 27
3	3, 3, 1, 9
3	1, 1, 1, 3
	1, 1, 1, 1

LCM = 2 X 2 X 2 X 2 X 2 X 3 X 3 X 3

= 864

This can be written as

= 867 − 3

Hence, 867 is the smallest no which, when decreased by 3 is exactly divisible by the given no.s.