Hw

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Ex 8(c)

1) Using the common multiple method, find the LCM of the following:

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, 110, 144, 168, 192 216, 240

Common multiples are = 24, 48, 72
= 144

ii) 10, 15 and 20

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

Common multiples are - 60 = LCM = 60

iii) 3, 6, 9 and 12

M_3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30
M_6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60
M_9 = 9, 18, 27, 36, 45, 54, 63, 72, 81, 90
M_{12} = 12, 24, 36, 48, 60, 72, 84, 96, 108, 120

LCM = 36

2) Find the LCM of each of the following groups of numbers, using i) the prime factor method and the common division method:

i) 18, 24 and 96

i) $18 = 2 \times 3 \times 3 = 2^1 \times 3^2$
$24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3^1$
$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 2^5 \times 3^1$
$= 2^5 \times 3^2$
~~$= 2^5 \times 3^1$~~ $= 2 \times 2 \times 2 \times 3 \times 2 \times 2 \times 3 = 288$
~~$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 192$~~

ii)

2	18, 24, 96
3	9, 12, 48
2	3, 4, 16
2	3, 2, 8
	3, 1, 4

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

ii) 100, 150, 200

i) $100 = 2 \times 2 \times 5 \times 5 = 2^2 \times 5^2$
$150 = 2 \times 5 \times 17 = 2^1 \times 5^1 \times 17^1$
$200 = 2 \times 2 \times 2 \times 5 \times 5 = 2^3 \times 5^2$

=

$= 2 \times 2 \times 5 \times 2 \times 17 \times 5 = 3400$

2) 2 | 100, 150, 200
2 | 50, 75, 100
5 | 10, 15, 20
2 | 2, 3, 4
1, 3, 2

LCM = 2X2X5X5X2X3 = ~~3400~~ 600

iii) 14, 21, and 98

i) 14 - 2X7 = 2'X7'
21 = 3X7 = 3'X7'
98 = 2X7X7 = 2'X7²

LCM = 2'X7²X3'
= 2X3X7X7
= 294

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

LCM = 2X7X1X3X7 = 294

iv) 22, 121, 33

i) 22 = 11X2 = 11'X2'
121 = 11X11 = 11²
33 = 11X3 = 11'X3'

LCM = 11²X3'X2'
= 11X11X2X3 = 726

2) 11 | 22, 33, 121
2, 3, 11

LCM = 11 X 2 X 3 X 11 = 726

iv) 34, 85 and 51

i) 34 = 2 X 2 X 7 = 2^2 X 7'
85 = 2 X 5 X 7 = 2' X 5' X 7'
51 = 3 X 17 = 3' X 17'

LCM = 2^2 X 7' X 5' X 2' X 3' X 17'
= 2 X 2 X 7 X 5 X 2 X 3 X 17 = 14280

~~ii) 34, 85 and 51~~

ii) 17 | 34, 85, 51
2, 85, 3

LCM = 17 X 2 X 3 X 85 = 1

v) 34, 85 and 51

i) 34 = 2 X 17 = 2' X 17'
85 = 5 X 17 = 5' X 17'
51 = 3 X 17 = 3' X 17'

LCM = 2' X 3' X 5' X 17'
= 2 X 3 X 5 X 17 = 510

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

LCM = 17 X 2 X 5 X 3 = 510

The HCF and LCM of two numbers are 50 and 300 respectively if one of the numbers is 150, find the other one.

HCF = 50
LCM = 300
One number = 150

The other number = HCF X LCM = other
One number number

$= \frac{300 \times 50}{150} = \frac{15000}{150} \quad \frac{15000}{150} = 100$

other number = 100

The product of two numbers is 432 and and their LCM is 72. Find their HCF

Product = 432 } HCF = ?
LCM = 72

$HCF = \frac{\text{their product}}{\text{their LCM}} = \frac{432}{72} = 51$

HCF = 51

5a) Find the product of two numbers is 19,200 and their HCF is 40. Find their LCM.

Ans. Product = 19,200
HCF = 40
LCM = ?

$$LCM = \frac{\text{Their product}}{\text{Their HCF}} = \frac{19200}{40} = 480$$

LCM = 480

6) Find the smallest number which, when increased by one is exactly divisible by ~~12, 18, 24, 32 and 40.~~ 12, 15, 18, 24 and 36 leaves no remainder.

Ans. 360

Find the smallest number which when increased by one is exactly divisible by 12, 18, 24, 32 and 40.

1439

Find the smallest number which on being decreased by 3, is completely divisible by 18, 36, 32 and 27.

867