CW

Ex - 8B

1. 16 and 35 - 16 - 1, 2, 4, 8, 16
35 - 1, 5, 7, 35
HCF = 1

2 | 16 | 5 | 35
2 | 8 | 7 | 7
2 | 4 | | 1
2

2. 25 and 20 = 25 - 1, 5, 25
20 - 1, 2, 4, 5, 10, 20
HCF of 25 and 20 is = 5

5 | 25 | 2 | 20
5 | 5 | 2 | 10
1 | | | 5

3. 27 and 75 = 27 - 1, 3, 9, 27
75 - 1, 3, 5, 25, 75
HCF of 27 and 75 is = 3

3 | 27 | 3 | 75
3 | 9 | 5 | 25
3 | | | 5

4. 8, 12 and 18 = 8 = 1, 2, 4, 8
12 = 1, 2, 4, 6, 12
18 = 1, 2, 3, 6, 9, 18
HCF of 8, 12 and 18 is = 2

2 | 8 | 2 | 12 | 2 | 18
2 | 4 | 2 | 6 | 3 | 9
2 | | 3 | | 3 |

5. 24, 36, 45 = 24 - 1, 2, 3, 4, 6, 8, 12, 24
36 - 1, 2, 3, 5, 7, 12, 18, 36
45 - 1,

2. using the prim factor
5 and 8

(1) using 5 - 1, 5 Prime factor of 5 and 8 5 = 1 x 5
8 - 1, 2, 4, 8 Prime factor of 8 = 2 x 2 x 2 = 8
HCF = 1

2. 24 and 49 24 - 1, 2, 4, 6, 8, 12, 24
49 - 1, 7, 49
Prime factor of 24 = 1 x 2 x 2 x 3
Prime factor of 49 = 1 x 7 x 7 = 49

2 | 24 | 7 | 49
2 | 12 | 7 | 7
2 | 6 | | 1
3 | 3 |

(iii) 40, 60 and 80

2	40	2	60	2	80
2	20	2	30	2	40
5	10	5	15	2	20
	2		3	5	10
				2	2
					1

40 Prime factor of HCF = ~~1×2×~~ 4, 2×2×2×5
40 prime factor HCF = 2×2×2×5
60 prime factor of HCF = 2×2×3×5
80 prime factor of HCF = 2×2×2×5×2
40, 60 and 80 prime factor of HCF = 2×2×5 = 20

(iv) 48, 84, and 88

2	48	2	84	2	88
2	24	2	42	2	44
2	12	3	21	2	22
3	6	7	7		11
	3		1		1
	1				

48 prime factor of HCF = 2×2×2×2×3
84 prime factor of HCF = 2×2×3×7
88 prime factor of HCF = 2×2×2×11
48, 84, 88 prime factor of HCF = 3
2×2 = 4 Ans

v. 12, 16, and 28

2	16	2	12	2	28
2	8	2	6	2	14
2	4	3	3	7	7
2	2		1		1
	1				

12 prime factor of HCF = 2×2×2
12 prime factor of HCF = 2×2×3
28 prime factor of HCF = 2×2×7
12, 16 and 28 prime factor of HCF =
2×2 = 4

3.2 18 and 30

18	30	1
	18	
12	18	1
	12	
6	12	2
	12	
	0	

HCF = 6.

1. 16 and 24

16	24	1
	16	
8	16	2
	16	
	0	

2	16	8
	16	
	0	

HCF = 8

iii) 7 | 14, 24 — 7, 14 and 24

7 | 14 | 2
0

14 | 24 | 1 — HCF = 1
14
10 | 14 | 1
10
4 | 7 | 1
4
3

7, 14, 24 HCF is = 1

7 | 14 | 2
- 14
0.

7 | 24 | 3
21
3

The highest common factor is 1.

(iv) 70, 80, 120 and 150.

Let us first find the HCF of = 70 and 80

70 | 80 | 1
70
10 | 70 | 7
70
0

Since the third number is 120 and the H.C.F obtained above is 10, Find the HCF of 10 and 120

10 | 120 | 12
10
20
20
0

The HCF of 10 and 150 = 10 | 150 | 15
10
50
50
0

Hence, the HCF of 70, 80, 120 and 150 is 10 Ans.

7. 32, 56 and 46

Let us first find the H.C.F of - 32, 56

32 | 56 | 1 — 32 | 56 | 1 — 32

24 | 32 | 1 — 24 | 32 — 24

08 | 24 | 3 — 8 | 24 | 3 — 24

0

Since the third number is 46 and the hcf obtained above ~~around~~ = 8 find the the HCF of 46

8 | 46 | 5 — 40

6 | 8 | 1 — 6

2

6 | 8 | 1 — 6

2 | 6 | 3 — 6

0

H.C.F - of given numbers - 32, 56 and 46 = 2

4.i. 45, 75 and 135

Factor of 45 = F45 = $3 \times 3 \times 5$

Factor of 75 = F75 = $3 \times 3 \times 5$

Factor of 135 = F135 = $3 \times 3 \times 3 \times 5$

Now the common factor of 45, 75, 135 = 3 and 5

$3 \times 5 = 15$

ii. 48, 36 and 96

Factor of 48 = F48 = $2^4 \times 3$ And the HCF is = 6

Factor of 36 = F36 = $3^2 \times 2^2$

Factor of 96 = F96 = $3^3 \times 2^2$

Now the common factor of 48, 36, 96 = 3 and 2 $3 \times 2 = 6$

iii. 66, 33 and 132

Factor of 66 = F66 = $2 \times 3 \times 11$

Factor of 33 = F33 = 3×11

Factor of 66 = F132 = $2 \times 2 \times 3 \times 11$

Now the common factor of 66, 33, 132 = 3 and 11

$3 \times 11 = 33$ And the HCF = 33

iv. 24, 36, 60 and 132

Factor of 24 = F24 = $2 \times 2 \times 2 \times 3$

Factor of 36 = F36 = $2 \times 2 \times 3 \times 3$

Factor of 60 = F60 = $2 \times 2 \times 3 \times 5$

Factor of 132 = F132 = $2 \times 2 \times 3 \times 11$

Now the common factor of 24, 36, 60, 132 = 2, 2 and 3

$2 \times 2 \times 3 = 12$ And the HCF = 12

v. 30, 60, 90 and 105

Factor of 30 = F30 = $2 \times 3 \times 5$

Factor of 60 = F60 = $2 \times 2 \times 3 \times 5$

Factor of 90 = F90 = $2 \times 3 \times 3 \times 5$

Factor of 105 = F105 = $3 \times 5 \times 7$

Now the common factor of 30, 60, 90 and 105 = 3 and 5

$3 \times 5 = 15$ And the HCF = 15

5A The greatest number that divides 180, 225 and 315 will be HCF of 180, 225, 315

Let us first find HCF of 180 and 225

180	225	1
	180	
45	180	4
	180	
	0	

5. Since the third number is 315 and HCF ~~will~~ be obtained above is 45. Find the HCF of 315 and 45

$$\begin{array}{r|l|l} 45 & 315 & 7 \\ & 315 & \\ \hline & 0 & \end{array}$$

H.C.F of given number 80, 225 and 315 = 45

6. The HCF of two coprime numbers is always HCF of 45 and 56

$$\begin{array}{r|l|l} 45 & 56 & 1 \\ & 45 & \\ \hline 11 & 45 & 4 \\ & 44 & \\ \hline 1 & 11 & 11 \\ & 11 & \\ \hline & 0 & \end{array}$$

From above it is proved that HCF of 45 and 56 is 1

Hence 45 and 56 are coprime number

7. Four of 15, 16, 21 and, 28, Find out all the pairs of coprime number

$$\begin{array}{r|l|l} 3 & 15 & 5 \\ & 15 & \\ \hline & 0 & \end{array} \qquad \begin{array}{r|l|l} 2 & 16 & 8 \\ & 16 & \\ \hline & 0 & \end{array} \qquad \begin{array}{r|l|l} 3 & 21 & 7 \\ & 21 & \\ \hline & 0 & \end{array} \qquad \begin{array}{r|l|l} 2 & 28 & 14 \\ & 2 & \\ \hline & 08 & \\ & 8 & \\ \hline & 0 & \end{array}$$

The HCF of 15 and 16

$$\begin{array}{r|l|l} 15 & 16 & 1 \\ & 15 & \\ \hline 1 & 15 & 1 \\ & 15 & \\ \hline & 0 & \end{array}$$

$$\begin{array}{r|l|l} 16 & 21 & 1 \\ & 16 & \\ \hline 5 & 16 & 3 \\ & 15 & \\ \hline 1 & 5 & 5 \\ & 5 & \\ \hline & 0 & \end{array}$$

7. From above it is clear that 15 and 16 are co-prime because the common factor is 1. Hence pair 15 and 16, 21, 15, 28 are the co-prime numbers.

8. 93 - 3 = 90, 111 - 3 = 108 and 129 - 3 = 126.
Number of HCF = 90, 108 and 126
And the ans is = 18

Exercise - 8C

1. 2 | 8, 12, 24
2 | 4, 6, 12
3 | 2, 3, 6
1, 2, 3

And the LCM is = 2×2×3×2×3×1×1
And the LCM ans is = 24

1. 18, 24, 96

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

2. 100, 150, 200

2 | 100, 150, 200
2 | 50, 75, 100
5 | 25, 75, 50
5 | 5, 15, 10