Evaluation Question / Exercise - 8B

1. i) 16 and 35

Factors of 16 = 1, 2, 4, 8, 16
Factors of 35 = 1, 5, 7, 35

Common factors = 1
HCF = 1

ii) 25 and 20

Factors of 25 = 1, 5, 25
Factors of 20 = 1, 4, 5, 20

Common factors = 1, 5
HCF = 5

iii) 27 and 75

Factors of 27 = 1, 3, 9, 27
Factors of 75 = 1, 3, 5, 15, 25, 75

Common factors = 1, 3
HCF = 3

iv) 8, 12, 18

F_8 = 1, 2, 4, 8
F_{12} = 1, 2, 3, 4, 6, 12
F_{18} = 1, 2, 3, 6, 9, 18

Common factors = 1 and 2
HCF = 2

v) 24, 36, 45 and 60

$F_{24} = 1, 2, 3, 4, 6, 8, 12, 24$
$F_{36} = 1, 2, 3, 4, 6, 9, 12, 18, 36$
$F_{45} = 1, 3, 5, 9, 15, 45$
$F_{60} = 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60$

Common factors = 1, 3
HCF = 3.

How? 21.6.21

2. Using prime factor method, find the HCF of:

i) 5 and 8 -

$P_5 = 5$
$P_8 = 2 \times 2 \times 2$
prime

No common factor is there,

Hence, the HCF of 5 and 8 = 1

ii) 24 and 49 -

$P_{24} = 2 \times 2 \times 2 \times 3$
$P_{49} = 7 \times 7$

No common ~~factor~~ prime factor is there,
Hence, the H.C.F of 24 and 49 = 1

iii) 40, 60, 80

2	40
2	20
2	10
5	5
	1

2	60
2	30
3	15
5	5
	1

2	80
2	40
2	20
2	10
5	5
	1

$P_{40} = 2 \times 2 \times 2 \times 5$
$P_{60} = 2 \times 2 \times 3 \times 5$
$P_{80} = 2 \times 2 \times 2 \times 2 \times 5$

Common Prime factors = 2, 2 and 5
HCF = $2 \times 2 \times 5$
$= 20$

iv) 48, 84 and 88

2	48
2	24
2	12
2	6
3	3
	1

2	84
2	42
3	21
7	7
	1

2	88
2	44
2	22
11	11
	1

$P_{48} = 2 \times 2 \times 2 \times 2 \times 3$
$P_{84} = 2 \times 2 \times 3 \times 7$
$P_{88} = 2 \times 2 \times 2 \times 11$

Common factors = 2 and 2
H.C.F = 2×2
$= 4$

v) 12, 16 and 28

2	12
2	6
3	3
	1

2	16
2	8
2	4
2	2
	1

2	28
2	14
7	7
	1

$P_{12} = 2 \times 2 \times 3$
$P_{16} = 2 \times 2 \times 2 \times 2$
$P_{28} = 2 \times 2 \times 7$

Common factors = 2 and 2
H.C.F = 2 x 2
= 4

Additional Homework -

Exercise - 8B

4. i) 45, 75 and 135

5	45, 75, 135
3	9, 15, 27
	3, 5, 9

H.C.F = 5 x 3
= 15

ii) 48, 36 and 96

3	48, 36, 96
2	16, 12, 32
2	8, 6, 16
	4, 3, 8

H.C.F = 2 x 2 x 2
= 12

C.W
22.6.21

Division by common factors-

5	45, 135
3	9, 27
3	3, 9
	1, 3

H.C.F = 5 × 3 × 3
= 45

Exercise - 8B

(3) Using the division method, find the H.C.F of the :

i) 16 and 24

16) 24 (1
-16
8) 16 (2
-16
0

H.C.F = 8

ii) 18 and 30

18) 30 (1
-18
12) 18 (1
-12
6) 12 (2
-12
0

H.C.F = 6

iii) 7, 14, 24.

14) 24 (1
-14
10) 14 (1
-10
4) 10 (2
-8
2) 4 (2
-4

H.C.F of 14 and 24 = 2

H.C.F of 2 and 7

$$
\begin{array}{r}
2\overline{)\,7\,(3} \\
-6 \\
\hline
1\overline{)\,2\,(2} \\
-2 \\
\hline
0
\end{array}
$$

H.C.F of 2 and 7 = 1

So, the H.C.F of 7, 14 and 24 is 1.

(5) Find the greatest no. that divides each of 180, 225, 315 completely.

Ans- H.C.F of 180 and 225

$$
\begin{array}{r}
180\overline{)\,225\,(1} \\
-180 \\
\hline
45\overline{)\,180\,(4} \\
-180 \\
\hline
0
\end{array}
$$

H.C.F of 180, 225 is 45.

H.C.F of 45 and 315

$$
\begin{array}{r}
45\overline{)\,315\,(7} \\
-315 \\
\hline
0
\end{array}
$$

H.C.F of 45, 315 is 45.

So, The H.C.F of 180, 225 and 315 is 45.
Hence the greatest no. that divides 180, 225 and 315 completely is 45.

(4) iii) 66, 33, 132.

11	66, 33, 132
3	6, 3, 12
	2, 1, 4

H.C.F = 11 × 3
= 33

iv) 24, 36, 60, 132.

2	24, 36, 60, 132
2	12, 18, 30, 66
3	6, 9, 15, 33
	2, 3, 5, 11

H.C.F = 2 × 2 × 3
= 12.

v) 30, 60, 90, 105

3	30, 60, 90, 105
5	10, 20, 30, 35
	2, 4, 6, 7

H.C.F = 3 × 5
= 15.

(8) Find the greatest no. that will devide 93, 111 and 129, leaving remainder 3 in each case.

Ans- Decrease the leaving remainder 3 from no.s 93, 111 and 129 to find the required no.

93 − 3 = 90
111 − 3 = 108
129 − 3 = 126

In each case, the H.C.F of 90, 108 and 126 will be the greatest no. that will divide 93, 111 and 129 leaving remainder 3.

The required no. is the H.C.F of 90, 108, and 126.

3	90, 108, 126
2	30, 36, 42
3	15, 18, 21
	5, 6, 7

H.C.F = 3 x 2 x 3
= 18.

So, The greatest no. that divides 93, 111 and 129 leaving a remainder of 3 is 18.

H.C.F of 22, 6, 21

(7) Out of 15, 16, 21 and 28, find out all the pairs of co-prime.

Ans- $F_{15} = 1, 3, 5, 15$
$F_{16} = 1, 2, 4, 8, 16$
$F_{21} = 1, 3, 7, 21$
$F_{28} = 1, 2, 4, 7, 14, 28$

Co-primes =

15 and 16
16 and 21
15 and 28

Additional Homework -

Exercise - 8B

(6) Show that 45 and 56 are co-primes.

Ans- $F_{45} = 1, 3, 5, 9, 15, 45$
$F_{56} = 1, 2, 4, 7, 8, 14, 28, 56$

As there are no common factors other than 1 between 45 and 56, 45 and 56 are a pair of co-primes.

(8) iv) 70, 80, 120 and 150.

```
70 ) 80 ( 1
   -70
   ---
   10 ) 70 ( 7
        -70
        ---
         0
```

H.C.F of 70 and 80 is 10

```
120 ) 150 ( 1
    -120
    ----
     30 ) 120 ( 4
          -120
          ----
            0
```

H.C.F of 120 and 150 is 30.

```
10 ) 30 ( 3
   -30
   ---
    0
```

H.C.F of 10 and 30 is 10.

So, the H.C.F of 70, 80, 120 and 150 is 10.

v) 32, 56 and 46

```
32) 56 (1
   -32
   ---
   24) 32 (1
      -24
      ---
       8) 24 (3
          -24
          ---
           0
```

H.C.F of 56 and 32 is 8.

```
8) 46 (5
  -40
  ---
   6) 8 (1
      -6
      --
       2) 6 (3
          -6
          --
           0
```

H.C.F of 46 and 8 = 2.

So, the H.C.F of 32, 56 and 46 is 2.