5. If P_n means factor of n, find:

(i) $P_6 = 1, 2, 3, 6$

(ii) $P_{24} = 1, 2, 3, 4, 6, 8, 12, 24$

(iii) $P_{50} = 1, 2, 5, 10, 25, 50$

(iv) $P_{42} = 1, 2, 3, 6, 7, 14, 21, 42$

H.W
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Ex - 8(B)

1- Using the common factor method, find the H.C.F of:

(i) 16 and 35

16 = 1, 2, 4, 8, 16
35 = 1, 5, 7, 35
H.C.F = 1

(ii) 27 and 75

27 = 1, (3), 9, 27
75 = 1, (3), 5, 15, 25, 75
H.C.F = 3

(iii) 25 and 20

25 = 1, (5), 25
20 = 1, 2, 4, (5), 10, 20
H.C.F = 5

(iv) 8, 12 and 18

8 = (1), (2), 4, 8
12 = (1), (2), 3, 4, 6, 12
18 = (1), (2), 3, 6, 9, 18
R; 1 HCF = 2

(v) 24, 36, 45 and 60

24 = 1, 2, 3, 4, 6, 8, 12, 24
36 = 1, 2, 3, 4, 6, 9, 12, 18, 36
45 = 1, 3, 5, 9, 15, 45
60 = 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
1, 3 H.C.F = 3

2. Using the Prime factor method, find the H.C.F of :

(i) 5 and 8
5 = 5 × 1
8 = 2 × 2 × 2
H.C.F = 1

(ii) 24 and 49
24 = 2 × 2 × 2 × 3
49 = 7 × 7
H.C.F = 1

(iii) 40, 60 and 80
40 = 2 × 2 × 2 × 5
60 = 2 × 2 × 3 × 5
80 = 2 × 2 × 2 × 2 × 5
HCF = 2 × 2 × 5 = 20

(iv) 48, 84, and 88
48 = 2 × 2 × 2 × 2 × 3
84 = 2 × 2 × 3 × 7
88 = 2 × 2 × 2 × 11
HCF = 2 × 2 = 4

(v) 12, 16 and 28
12 = 2 × 2 × 3
16 = 2 × 2 × 2 × 2
28 = 2 × 2 × 7
HCF = 2 × 2

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

(i) 16 and 24 = 8

$$\begin{array}{r|l} 16 & 24 \\ -16 & 1 \\ \hline 8 & 16 \\ -16 & 2 \\ \hline 0 & \end{array}$$

(ii) 18 and 30 = 6

$$\begin{array}{r|l} 18 & 30 \\ -18 & 1 \\ \hline 12 & 18 \\ -12 & 1 \\ \hline 6 & 12 \\ -12 & 2 \\ \hline 0 & \end{array}$$

(iii) 7, 14 and 24 = 1

$$\begin{array}{r|l} 7 & 14 \\ -14 & 2 \\ \hline 0 & \end{array} \qquad \begin{array}{r|l} 7 & 24 \\ -21 & 3 \\ \hline 3 & 7 \\ -6 & 2 \\ \hline 1 & 3 \\ -3 & 3 \\ \hline 0 & \end{array}$$

(iv) 70, 80, 120 and 150 = 10

$$\begin{array}{r|l} 70 & 80 \\ -70 & 1 \\ \hline 10 & 70 \\ -70 & 7 \\ \hline 0 & \end{array} \qquad \begin{array}{r|l} 10 & 120 \\ -10 & 12 \\ \hline 20 & \\ -20 & \\ \hline 0 & \end{array}$$

$$\begin{array}{r|l} 10 & 50 \\ -10 & 15 \\ \hline 50 & \\ -50 & \\ \hline 0 & \end{array}$$

(v) 32, 56 and 46 = 2

$$\begin{array}{r|l} 32 & 56 \\ -32 & 1 \\ \hline 24 & 32 \\ -24 & 1 \\ \hline 8 & 24 \\ -24 & 3 \\ \hline 0 & \end{array} \qquad \begin{array}{r|l} 8 & 46 \\ -40 & 5 \\ \hline 6 & 8 \\ -6 & 1 \\ \hline 2 & 6 \\ -6 & 3 \\ \hline 0 & \end{array}$$

4- Use a Method of your own choice to find the H.C.F of:

(i) 45, 75 and 135 (division method)

45) 75 (1
- 45
30) 45 (1
- 30
15) 30 (2
- 30
0

15) 135 (9
- 135
0

H.C.F = 15

(ii) 48, 36 and 96 (prime factorisation method)

48 = 2 × 2 × 2 × 2 × 3
36 = 2 × 2 × 3 × 3
96 = 2 × 2 × 2 × 2 × 2 × 3
HCF = 2 × 2 × 3 = 12

(iii) 66, 36, and 132 (prime factorisation method)

66 = 2 × 3 × 11
36 = 2 × 2 × 3 × 3
132 = 2 × 2 × 3 × 11
HCF = 2 × 3 = 6

(iv) ~~70, 80, 120, and~~ 24, 36, 60 and 132

24) 36 (1
- 24
12) 24 (2
- 24
0

12) 60 (5
- 60
0

12) 132 (11
- 12
12
- 12
0

H.C.F = 12

(v) 30, 60, 90 and 105

$30 = 2 \times 3 \times 5$
$60 = 2 \times 2 \times 3 \times 5$
$90 = 2 \times 3 \times 3 \times 5$
$105 = 3 \times 5 \times 7$
$HCF = 3 \times 5 = 15$

5. Find the greatest number that divides each of 180, 225 and 315 completely.

So, we need to find the H.C.F of 180, 225 and 315 is

```
180 ) 225 ( 1
    - 180
    -----
     45 ) 180 ( 4
        - 180
        -----
          0
```

```
45 ) 315 ( 7
   - 315
   -----
     0
```

6. Show that 45 and 56 are co-prime numbers.

Common factor method

$45 = 1, 3, 5, 9, 15, 45$
$56 = 1, 2, 4, 7, 8, 14, 28, 56$
$HC.F = 1$

Prime factor method

$45 = 3 \times 3 \times 5$
$56 = 2 \times 2 \times 2 \times 7$
$H.C.F = 1$

```
2 | 56
2 | 28
2 | 14
  |  7
```

```
3 | 45
3 | 15
  |  5
```

Common Division Method

45) 56 (1
-45
11) 45 (4
-44
1) 11 (11
-1↓
01
-1
0

HCF = 1

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

15, 16; 16, 21; 15, 28; ~~21, 28~~

8. Find the greatest number that will divide 93, 111, and 129, leaving remainder 3 in each case.

93 − 3 = 90

111 − 3 = 108

129 − 3 = 126

90) 108 (1
-90
18) 90 (5
-90
0

18) 126 (7
-126
0

90) 126 (1
-90
36) 90 (2
-72
18) 36 (2
-36
0

18) 108 (6
-108