H.W

Exercise 8 (B)

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

i) 16 and 35

Ans ⇒ 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

Ans ⇒ 25 and 20

Factors of 25 = 1, 5, 25

Factors of 20 = 1, 2, 4, 5, 10, 20

Common factors = 1, 5
HCF = 5

iii) 27 and 75
Ans⇒ 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 and 18
Ans⇒ 8, 12 and 18
Factors of 8 = 1, 2, 4, 8
Factors of 12 = 1, 2, 6, 12, 3, 4
Factors of 18 = 1, 18, 3, 6, 2, 9
Common factors = 1, 2
HCF = 2

v) 24, 36, 45 and 60
Ans⇒ 24, 36, 45 and 60
Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24
Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36
Factors of 60 = 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
Factors of 45 = 1, 3, 5, 9, 15, 45
Common factors = 1, 3
HCF = 3

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

iv) 48, 84 and 88

Ans⇒ 48, 84 and 88

$48 = 2 \times 2 \times 2 \times 2 \times 3$

$84 = 2 \times 2 \times 3 \times 7$

$88 = 2 \times 2 \times 2 \times 11$

Common factors $= 2 \times 2$

$HCF = 2 \times 2 = 4$

v) 12, 16 and 28

Ans⇒ 12, 16 and 28

$12 = 2 \times 2 \times 3$

$16 = 2 \times 2 \times 2 \times 2$

$28 = 2 \times 2 \times 7$

Common factors $= 2$

$HCF = 2 \times 2 = 4$

3. Using the division method, find the HCF of the following:

i) 16 and 24

Ans⇒ 16 and 24

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

$HCF = 2$

4. Use method of your own choice to find the HCF of:

Ans

i) 45, 75 and 135

Ans 45)

Ans> 45, 75 and 135

$$\begin{array}{r} 1 \\ 45\overline{)75} \\ -45 \\ \hline 30 \end{array} \qquad \begin{array}{r} 1 \\ 45 \\ \hline 2 \\ 30\overline{)45} \\ -30 \\ \hline 15 \end{array} \qquad \begin{array}{r} 2 \\ 30 \\ -30 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 9 \\ 15\overline{)135} \\ -135 \\ \hline 0 \end{array}$$

HCF = 15

ii) 48, 36 and 96

Ans> 48, 36 and 96

$$\begin{array}{r} 2 \\ 36\overline{)96} \\ -82 \\ \hline 14 \end{array} \qquad \begin{array}{r} 2 \\ 36 \\ \hline 1 \\ 14\overline{)36} \\ -28 \\ \hline 8 \end{array} \qquad \begin{array}{r} 1 \\ 14 \\ -8 \\ \hline 6 \end{array}$$

$$
\begin{array}{r}
1 \\
6 \overline{)\,8} \\
-6 \\
\hline
2
\end{array}
\qquad
\begin{array}{r}
3 \\
\overline{)\,6} \\
-6 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
24 \\
2 \overline{)\,48} \\
-48 \\
\hline
0
\end{array}
$$

HCF = 2

(iii) 66, 33 and 132

Ans

$$
\begin{array}{r}
2 \\
33 \overline{)\,66} \\
-66 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
4 \\
33 \overline{)\,132} \\
-132 \\
\hline
0
\end{array}
$$

HCF = 33

iv) 24, 36, 60 and 132

Ans

$$\begin{array}{r} 1 \\ 36 \overline{)\,60} \\ -36 \\ \hline 24 \end{array} \qquad \begin{array}{r} 1 \\ 24 \overline{)\,36} \\ -24 \\ \hline 12 \end{array} \qquad \begin{array}{r} 2 \\ 12 \overline{)\,24} \\ -24 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 2 \\ 12 \overline{)\,24} \\ -24 \\ \hline 0 \end{array} \qquad \begin{array}{r} 11 \\ 12 \overline{)\,132} \\ -132 \\ \hline 0 \end{array}$$

HCF = 12

v) 30, 60, 90 and 105

Ans

$$\begin{array}{r} 2 \\ 30 \overline{)\,60} \\ -60 \\ \hline 0 \end{array} \qquad \begin{array}{r} 3 \\ 30 \overline{)\,90} \\ -90 \\ \hline 0 \end{array}$$

```
        3
   ( 30 ) 105
        - 90      2
          15 ) 30
             - 30
               0
```

~~HCF=2~~
HCF=15

2:i) 5 and 8
Ans⇒ 5 and 8
5=5
8=2×2×2
Common factors=1
HCF=1

ii) 24 and 49
Ans⇒ 24=2×2×2×3
49=7×7
Common factors=1
HCF=1

iii) 40, 60 and 80
Ans⇒ 40=2×2×2×5
~~60=2×2×3×2×5~~
60=2×2×3×5
80=2×2×2×2×5
Common factors=2, 5
HCF=2×2×5=20

3. iii) 7, 14 and 24

Ans⇒ 7, 14 and 24

$$7 \overline{)14}\ (2,\ 0$$

$$7 \overline{)24}\ (3,\ -21$$

$$3 \overline{)7}\ (2,\ -6$$

$$1 \overline{)3}\ (3,\ -3,\ 0$$

HCF = 1

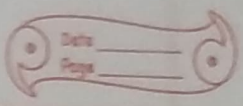
iv) 70, 80, 120 and 150

Ans⇒ ~~120 70~~

$$\overline{)120}\ (1,\ -70$$

$$50 \overline{)70}\ (1,\ -50$$

$$20$$



$$
\begin{array}{r}
2 \\
20\overline{)\,50} \\
-40 \\
\hline
10
\end{array}
\qquad
\begin{array}{r}
2 \\
10\overline{)\,20} \\
-20 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
8 \\
10\overline{)\,80} \\
-80 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
15 \\
10\overline{)\,150} \\
-150 \\
\hline
0
\end{array}
$$

HCF = 10

v) 32, 56 and 46

Ans

$$
\begin{array}{r}
1 \\
46\overline{)\,56} \\
-46 \\
\hline
10
\end{array}
\qquad
\begin{array}{r}
4 \\
10\overline{)\,46} \\
-40 \\
\hline
6
\end{array}
\qquad
\begin{array}{r}
1 \\
6\overline{)\,10} \\
-6 \\
\hline
4
\end{array}
\qquad
\begin{array}{r}
1 \\
4\overline{)\,6} \\
-4 \\
\hline
2
\end{array}
\qquad
\begin{array}{r}
2 \\
2\overline{)\,4} \\
-4 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
16 \\
2\overline{)\,32} \\
-32 \\
\hline
0
\end{array}
$$

HCF = 2

ii) 18 and 30

Ans→

$$
\begin{array}{r}
1 \\
18\overline{)\,30} \\
-18 \\
\hline
12
\end{array}
\qquad
\begin{array}{r}
1 \\
12\overline{)\,18} \\
-12 \\
\hline
6
\end{array}
\qquad
\begin{array}{r}
2 \\
6\overline{)\,12} \\
-12 \\
\hline
0
\end{array}
$$

HCF = 6

5. The greatest number that divides 180, 225 and 315 ~~completly~~ completely is their HCF.

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

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

∴ The greatest number that divides 180, 225 and 315 completly is ~~is~~ 45.

6. Two numbers are co-primes when their hcf is 1.

45, 56

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

The hcf of 45 and 56 is 1.
So, they are co-primes.

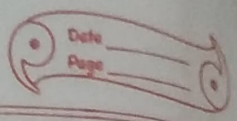
7.

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

HCF of 15 and 16 = 1

$$\begin{array}{r|l} & 1 \\ 15 & 21 \\ -15 & 2 \\ \hline 6 & 15 \\ -12 & 2 \\ \hline 3 & 6 \\ -6 & \\ \hline & 0 \end{array}$$

HCF of 15 and 21 = 3



$$
\begin{array}{r|l}
15 & 28 \\
 & -15 \\
\hline
13 & 15 \\
 & -13 \\
\hline
2 & 13 \\
 & -12 \\
\hline
1 & 2 \\
 & -2 \\
\hline
 & 0
\end{array}
\qquad
\begin{array}{l}
1 \\
1 \\
6 \\
2 \\
\end{array}
$$

HCF of 15 and 28 = 1

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

HCF of 21 and ~~28~~ 16 = 1

$$
\begin{array}{r|l}
16 & 28 \\
 & -16 \\
\hline
12 & 16 \\
 & -12 \\
\hline
4 & 12 \\
 & -12 \\
\hline
 & 0
\end{array}
\qquad
\begin{array}{l}
1 \\
1 \\
3 \\
\end{array}
$$

HCF of 16 and 28 = 4

$$
\begin{array}{r|l}
21 & 28 \quad 1 \\
 & -21 \\
\hline
 & 7 \quad 3 \\
 & 21 \\
 & -21 \\
\hline
 & 0
\end{array}
$$

HCF of 21 and 28 = 7

(6) ~~15, 16~~ 15 and 16, 15 and 28, 21 and 16 are the pairs which are co-primes because their hcf is 1.

8. The greatest number that will divide 93, 111 and 129, leaving remainder 3 in each case is:

~~93 - 90 = 111~~

93 - 3 = 90

111 - 3 = 108

129 - 3 = 126

The hcf of 90, 108, and 126 is required:-

$$
\begin{array}{r}
1 \\
90 \overline{)\,108} \\
-\,90 \\
\hline
18
\end{array}
$$

$$
\begin{array}{r}
5 \\
18 \overline{)\,90} \\
-\,90 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
7 \\
18 \overline{)\,126} \\
-\,126 \\
\hline
0
\end{array}
$$

The greatest number that will divide 93, 111, and 129, leaving 3 in each case is 18.