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class :- 2 Sec :- 5C7



Exercise 8(B)

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

i) 16 and 35

Factor of 16 :- ①, 2, 4, 8 and 16

Factor of 35 :- ①, 5, 7 and 35

H.C.F = 1

ii) 25 and 20

Factor of 25 :- ①, 5 and 25

Factor of 20 :- ①, 2, 4, 5, 10 and 20

H.C.F = 5

iii) 27 and 75

Factor of 27 :- ①, 3, 9 and 27

Factor of 75 :- ①, 3, 5, 15 and 75

H.C.F = 3

iv) 8, 12 and 18

Factor of 8 :- 1, 2, 4 and 8

Factor of 12 :- 1, 2, 3, 4, 6 and 12

Factor of 18 :- 1, 2, 3, 6, 9 and 18

H.C.F. = 2

v) 24, 36, 45 and 60

Factor of 24 :- 1, 2, 3, 4, 6, 8, 12 and 24

Factor of 36 :- 1, 2, 3, 4, 6, 9, 12, 14, 21, 28, 42, 18, and 36

Factor of 45 :- 1, 3, 5, 9, 15 and 45

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

(i) 45 and 60

Factor of 45 :- 1, 3, 5, 9, 15 and 45

Factor of 60 :- 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60

H.C.F. = 15

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

i) 5 and 8

prime factor of 5 :- 5

prime factor of 8 :- $2 \times 2 \times 2 = 8$ (No H.C.F)

ii) 24 and 49

prime factor of 24 :- $2 \times 2 \times 2 \times 3 = 24$

prime factor of 49 :- $7 \times 7 = 49$

iii) 40, 60 and 80

prime factor of 40 :- $2 \times 2 \times 2 \times 5 = 40$

prime factor of 60 :- $2 \times 2 \times 3 \times 5 = 60$

prime factor of 80 :- $2 \times 2 \times 2 \times 2 \times 5 = 80$

H.C.F :- $2 \times 2 \times 5 = 20$

iv) 48, 84 and 88

prime factor of 48 :- $2 \times 2 \times 2 \times 2 \times 3 = 48$

prime factor of 84 :- $2 \times 2 \times 3 \times 7 = 84$

H

prime factor of 88 :- $2 \times 2 \times 2 \times 11 = 88$

H.C.F :- $2 \times 2 = 4$

v) 12, 16 and 28

prime factor of 12 :- $2 \times 2 \times 3 = 12$

prime factor of 16 :- $2 \times 2 \times 2 \times 2 = 16$

~~prime~~ of ~~H.C.F~~

prime factor of 28 :- $2 \times 2 \times 7 = 28$

H.C.F :- $2 \times 2 = 4$

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

i) 16 and 24

$$\begin{array}{r} 1 \\ 16 \overline{) 24} \\ \underline{- 16} \\ 08 \\ \underline{- 16} \\ 0 \\ \times \end{array}$$

Since the last divisor is 8

∴ H.C.F :- 8

ii) 18 and 30

$$\begin{array}{r}
 18 \overline{) 30} \\
 \underline{- 18} \quad 1 \\
 12 \overline{) 18} \\
 \underline{+ 12} \quad 2 \\
 06 \overline{) 12} \\
 \underline{- 12} \\
 \hline
 \times
 \end{array}$$

Since the last divisor is 6

∴ H.C.F :- 6

iii) 7, 14 and 24

$$\begin{array}{r}
 7 \overline{) 14} \\
 \underline{+ 14} \\
 \hline
 \times
 \end{array}$$

H.C.F of 7 and 14 :- 7

$$\begin{array}{r}
 7 \overline{) 24} \\
 \underline{- 21} \quad 2 \\
 03 \overline{) 7} \\
 \underline{- 6} \quad 3 \\
 01 \overline{) 3} \\
 \underline{- 3} \\
 \hline
 \times
 \end{array}$$

The H.C.F of 7, 14 and 21 is 1.

iv) 70, 80, 120 and 150

$$\begin{array}{r} 1 \\ 70 \overline{) 80} \\ \underline{- 70} \\ 10 \end{array} \quad \begin{array}{r} 7 \\ 70 \overline{) 70} \\ \underline{- 70} \\ \end{array}$$

H.C.F of 70 and 80 = 10

$$\begin{array}{r} 12 \\ 10 \overline{) 120} \\ \underline{- 120} \\ \end{array} \quad \begin{array}{r} 12 \\ 10 \overline{) 120} \\ \underline{- 120} \\ \end{array}$$

$$\begin{array}{r} 15 \\ 10 \overline{) 150} \\ \underline{- 150} \\ \end{array}$$

H.C.F of 70, 80, 120 and 150 = 10

v) 32, 56 and 46

$$\begin{array}{r}
 1 \\
 \hline
 32 \overline{) 56} \\
 \underline{- 32} \\
 24 \\
 \hline
 24 \overline{) 24} \\
 \underline{- 24} \\
 08 \\
 \hline
 08 \overline{) 24} \\
 \underline{- 24} \\
 0 \\
 \hline
 X
 \end{array}$$

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

$$\begin{array}{r}
 5 \\
 \hline
 8 \overline{) 46} \\
 \underline{- 40} \\
 06 \\
 \hline
 06 \overline{) 6} \\
 \underline{- 6} \\
 0 \\
 \hline
 2 \overline{) 6} \\
 \underline{- 6} \\
 0 \\
 \hline
 X
 \end{array}$$

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

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

i) 45, 75 and 135

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

H.C.F of 45 and 75 = 15

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

H.C.F of 45, 75 and 135 = 15

ii) ~~18 and 30~~

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

H.C.F of 18 and 30 = 6.

i) ii) 48, 36 and 96

~~$$\begin{array}{r}
 48 \\
 36 \overline{) 48} \\
 \underline{-36} \\
 12 \\
 3 \overline{) 12} \\
 \underline{-36} \\
 0
 \end{array}$$~~

H.C.F of 48 and 36 = 12

$$\begin{array}{r} 8 \\ 12 \overline{) 96} \\ \underline{-96} \\ \hline X \end{array}$$

H.C.F of 98, 36 and 96 = 12

iii) 66, 33 and 132

$$\begin{array}{r} 2 \\ 33 \overline{) 66} \\ \underline{-66} \\ \hline X \end{array}$$

H.C.F of 66 and 33 = 33

$$\begin{array}{r} 4 \\ 33 \overline{) 132} \\ \underline{-132} \\ \hline X \end{array}$$

H.C.F of 66, 33 and 132 = 33

iv) 24, 36, 60 and 132

$$\begin{array}{r}
 1 \\
 \hline
 24 \overline{) 36} \\
 \underline{- 24} \quad 2 \\
 \hline
 12 \overline{) 24} \\
 \underline{- 24} \\
 \hline
 X
 \end{array}$$

H.C.F. of 24 and 36 = 12 \therefore

$$\begin{array}{r}
 5 \\
 \hline
 12 \overline{) 60} \\
 \underline{- 60} \\
 \hline
 X
 \end{array}$$

H.C.F. of 12 and 60 = 12

~~$$\begin{array}{r}
 9 \\
 \hline
 12 \overline{) 108} \\
 \underline{- 108} \\
 \hline
 X
 \end{array}$$~~

$$\begin{array}{r}
 1 \\
 \hline
 12 \overline{) 132} \\
 \underline{- 12} \\
 \hline
 012 \overline{) 12} \\
 \underline{- 12} \\
 \hline
 X
 \end{array}$$

H.C.F. of 24, 36, 60
and 132 = 12

$$\begin{array}{r}
 1 \\
 \hline
 \underline{- 12} \\
 \hline
 X
 \end{array}$$

v) 30, 60, 90 and 105

$$\begin{array}{r} 2 \\ 30 \overline{) 60} \\ \underline{-60} \\ \hline \end{array}$$

H.C.F of 30 and 60 = 30

$$\begin{array}{r} 1 \\ 60 \overline{) 90} \\ \underline{-60} \\ 30 \end{array}$$
$$\begin{array}{r} 2 \\ 30 \overline{) 60} \\ \underline{-60} \\ \hline \end{array}$$

H.C.F of 60 and 90 is = 30

$$\begin{array}{r} 3 \\ 30 \overline{) 90} \\ \underline{-90} \\ \hline \end{array}$$
$$\begin{array}{r} 2 \\ 15 \overline{) 30} \\ \underline{-30} \\ \hline \end{array}$$

H.c.F of 30, 60, 90 and 105
= 15

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

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

Ans:- 56 :- $2 \times 2 \times 2 \times 7$

45 :- $3 \times 3 \times 5$

45 and 56 have no common factor

\therefore 45 and 56 are co-prime numbers.

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

Ans:- 15 :- 3×5

21 :- 3×7

16 :- $2 \times 2 \times 2 \times 2$

28 :- $2 \times 2 \times 7$

Pair of co-prime numbers are
15 and 16, 16 and 21, 15 and
28.

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

Since, $93 - 3 = 90$, $111 - 3 = 108$ and
 $129 - 3 = 126$. \therefore Required number
is H.C.F. of 90, 108 and 126.

$$\begin{array}{r} 90 \overline{) 108} \\ \underline{90} \\ 18 \end{array}$$
$$\begin{array}{r} 18 \overline{) 90} \\ \underline{90} \\ \end{array}$$
$$\begin{array}{r} 18 \overline{) 126} \\ \underline{126} \\ \end{array}$$

H.C.F of 90 and 108 is = 18

$$\begin{array}{r} 18 \overline{) 126} \\ \underline{126} \\ \end{array}$$

H.C.F of 90, 108 and 126
is = 18