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Jender Heart High School, Sec-33B, Chandigarh

Class:- VI

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Subject:- Maths

Teacher - Ms. Sushma

Exercise 6C

1. Find the H.C.F. of the following numbers using prime factorisation method:

(i) 32, 56

Soln:- By prime factorisation, we get:-

|                                                                                                                                   |                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| $\begin{array}{r} 2 \overline{)32} \\ 2 \overline{)16} \\ 2 \overline{)8} \\ 2 \overline{)4} \\ 2 \overline{)2} \\ 1 \end{array}$ | $\begin{array}{r} 2 \overline{)56} \\ 2 \overline{)28} \\ 2 \overline{)14} \\ 7 \overline{)7} \\ 1 \end{array}$ |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|

$$\therefore 32 = 2 \times 2 \times 2 \times 2 \times 2$$

$$56 = 2 \times 2 \times 2 \times 7$$

$$\text{HCF}(32, 56) = 2 \times 2 \times 2 = 8 \text{ Ans}$$

(ii) 144, 180, 198

Soln:- By prime factorisation, we get:-

|                                                                                                                                                         |                                                                                                                                      |                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| $\begin{array}{r} 2 \overline{)144} \\ 2 \overline{)72} \\ 2 \overline{)36} \\ 2 \overline{)18} \\ 3 \overline{)9} \\ 3 \overline{)3} \\ 1 \end{array}$ | $\begin{array}{r} 2 \overline{)180} \\ 2 \overline{)90} \\ 3 \overline{)45} \\ 3 \overline{)15} \\ 5 \overline{)5} \\ 1 \end{array}$ | $\begin{array}{r} 2 \overline{)198} \\ 3 \overline{)99} \\ 3 \overline{)33} \\ 11 \overline{)11} \\ 1 \end{array}$ |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|

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$$\therefore 144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$$

$$180 = 2 \times 2 \times 3 \times 3 \times 5$$

$$198 = 2 \times 3 \times 3 \times 11$$

$$\text{HCF}(144, 180, 198) = 2 \times 3 \times 3 = 18 \text{ Ans.}$$

2. Find the HCF of the following numbers using long division method:

(i) 144, 312

Soln:-

$$\begin{array}{r} 2 \\ 144 \overline{) 312} \\ \underline{-288} \\ 24 \overline{) 144} \quad [6] \\ \underline{-144} \\ 0 \end{array}$$

$$\text{HCF}(144, 312) = 24$$

(ii) 252, 576

$$\begin{array}{r} 23 \\ 252 \overline{) 576} \\ \underline{-504} \\ 72 \overline{) 252} \\ \underline{-216} \\ 36 \overline{) 72} \\ \underline{-72} \\ 0 \end{array}$$

$$\text{HCF}(252, 576) = 36$$

iii) 112, 140, 168

We first find the H.C.F of 112 and 140

$$\begin{array}{r} 112 \overline{) 140} \phantom{0} \\ - 112 \phantom{0} \\ \hline 28 \overline{) 112} \phantom{0} \\ - 112 \phantom{0} \\ \hline 0 \end{array}$$

$$\text{HCF}(112, 140) = 28$$

Now, we find the H.C.F of 28 and 168

$$\begin{array}{r} 28 \overline{) 168} \phantom{0} \\ - 168 \phantom{0} \\ \hline 0 \end{array}$$

$$\text{HCF}(28, 168) = 28$$

$$\therefore \text{The H.C.F of } (112, 140, 168) = 28$$

Q3. Find the greatest number that exactly divides 385 and 735.

Soln:→ The required number = H.C.F of 385 and 735

$$\begin{array}{r} 385 \overline{) 735} \phantom{0} \\ - 385 \phantom{0} \\ \hline 350 \overline{) 385} \phantom{0} \\ - 350 \phantom{0} \\ \hline 35 \overline{) 350} \phantom{0} \\ - 350 \phantom{0} \\ \hline 0 \end{array}$$

$$\therefore \text{HCF}(385, 735) = 35$$

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So, the required number = 35.

Q4. Find the greatest number that will divide 37 and 53 leaving 5 as remainder in each case.

Soln:- Required Number = HCF of  $(37-5), (53-5)$   
 $= \text{HCF}(32, 48)$

$$\begin{array}{r} 32 \overline{) 48} \begin{array}{l} 1 \\ - 32 \\ \hline 16 \end{array} \begin{array}{l} 2 \\ - 32 \\ \hline 0 \end{array} \end{array}$$

$\therefore$  Required Number is '16'.

Q5. Use H.C.F to show that 357 and 1625 are co-primes.

Soln:- HCF (357, 1625)

$$\begin{array}{r} 357 \overline{) 1625} \begin{array}{l} 4 \\ - 1428 \\ \hline 197 \end{array} \end{array}$$

HCF = 1

$$\begin{array}{r} 197 \overline{) 357} \begin{array}{l} 1 \\ - 197 \\ \hline 160 \end{array} \end{array}$$

$\Rightarrow$  357 and 1625

are co-primes.

(Two natural nos which do not have a common prime factor.)

$$\begin{array}{r} 160 \overline{) 197} \begin{array}{l} 1 \\ - 160 \\ \hline 37 \end{array} \end{array}$$

$$\begin{array}{r} 37 \overline{) 160} \begin{array}{l} 4 \\ - 148 \\ \hline 12 \end{array} \end{array}$$

$$\begin{array}{r} 12 \overline{) 37} \begin{array}{l} 3 \\ - 36 \\ \hline 1 \end{array} \end{array}$$