(7) Find the least number by which 1323 must be multiplied so that the product is a perfect cube.

→

$$\begin{array}{r|l} 3 & 1323 \\ \hline 3 & 441 \\ \hline 3 & 147 \\ \hline 7 & 49 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

= The prime factors of 1323 are =
$3 \times 3 \times 3 \times 7 \times 7$
$= (3 \times 3 \times 3) \times 7 \times 7$

Clearly, 1323 must be multiplied by 7

(8) Find the smallest number by which 8768 must be divided so that the quotient is a perfect cube.

→

$$\begin{array}{r|l} 2 & 8768 \\ \hline 2 & 4384 \\ \hline 2 & 2192 \\ \hline 2 & 1096 \\ \hline 2 & 548 \\ \hline 2 & 274 \\ \hline 137 & 137 \\ \hline & 1 \end{array}$$

$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 137$

$= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times 137$

Clearly, 8678 must be divided by 137

(9) Find the smallest number by which 27783 be multiplied to get a perfect cube number

$$
\begin{array}{r|l}
3 & 27783 \\
3 & 9261 \\
3 & 3087 \\
3 & 1029 \\
7 & 343 \\
7 & 49 \\
7 & 7 \\
 & 1
\end{array}
$$

$= 3 \times 3 \times 3 \times 3 \times 7 \times 7 \times 7$

$= (3 \times 3 \times 3) \times (7 \times 7 \times 7) \times 3$

Clearly, 27783 must be multiplied by $3 \times 3 = 9$

(10) With what least number must 8640 be divided so that the quotient is a perfect cube ?

→

2 | 8640
2 | 4320
2 | 2160
2 | 540
2 | 270
3 | 135
3 | 45
3 | 15
5 | 5
1

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

$= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (3 \times 3 \times 3) \times 5$

Clearly, 8640 must be divided by 5

(11) Which is the smallest numbere that must be multiplied to 77175 to make it a perfect cube?

→

3 | 77175
3 | 25725
3 | 8575
5 | 1715
7 | 343
7 | 49
7 | 7
1

$= 3 \times 3 \times 5 \times 5 \times 7 \times 7 \times 7$

$= (7 \times 7 \times 7) \times 3 \times 3 \times 5 \times 5$

Clearly, 7 7 1 7 5 must be multiplied by $3 \times 5 = 15$