



Cubes and Cubes Roots Ex 4.3 Q3

Answer :

(i)

We have:

$$\begin{array}{r} 130 \\ \underline{1} \\ 129 \\ \underline{7} \\ 122 \\ \underline{19} \\ 103 \\ \underline{37} \\ 66 \\ \underline{61} \\ 5 \end{array}$$

\therefore The next number to be subtracted is 91, which is greater than 5.

\therefore 130 is not a perfect cube.

However, if we subtract 5 from 130, we will get 0 on performing successive subtraction and the number will become a perfect cube.

If we subtract 5 from 130, we get 125. Now, find the cube root using successive subtraction.

We have:

$$\begin{array}{r} 125 \\ \underline{1} \\ 124 \\ \underline{7} \\ 117 \\ \underline{19} \\ 98 \\ \underline{37} \\ 61 \\ \underline{61} \\ 0 \end{array}$$

\therefore The subtraction is performed 5 times.

$$\therefore \sqrt[3]{125} = 5$$

Thus, it is a perfect cube.

(ii)

We have:

$$\begin{array}{r} 345 \\ \underline{1} \\ 344 \\ \underline{7} \\ 337 \\ \underline{19} \\ 318 \\ \underline{37} \\ 281 \\ \underline{61} \\ 220 \\ \underline{91} \\ 129 \\ \underline{127} \\ 2 \end{array}$$

\therefore The next number to be subtracted is 161, which is greater than 2.

\therefore 345 is not a perfect cube.

However, if we subtract 2 from 345, we will get 0 on performing successive subtraction and the number will become a perfect cube.

If we subtract 2 from 345, we get 343. Now, find the cube root using successive subtraction.

$$\begin{array}{r} 343 \\ \underline{1} \\ 342 \\ \underline{7} \\ 335 \\ \underline{19} \\ 316 \\ \underline{37} \\ 279 \\ \underline{61} \\ 218 \\ \underline{91} \\ 127 \\ \underline{127} \\ 0 \end{array}$$

\therefore The subtraction is performed 7 times.

$$\therefore \sqrt[3]{343} = 7$$

Thus, it is a perfect cube.

(iii)

We have:

$$\begin{array}{r}
 792 \\
 \underline{1} \\
 791 \\
 \underline{7} \\
 784 \\
 \underline{19} \\
 765 \\
 \underline{37} \\
 728 \\
 \underline{61} \\
 667 \\
 \underline{91} \\
 576
 \end{array}$$

$$\begin{array}{r}
 127 \\
 449 \\
 \underline{169} \\
 280 \\
 \underline{217} \\
 63
 \end{array}$$

\therefore The next number to be subtracted is 271, which is greater than 63.

\therefore 792 is not a perfect cube.

However, if we subtract 63 from 792, we will get 729 on performing successive subtraction and the number will become a perfect cube.

If we subtract 63 from 792, we get 729. Now, find the cube root using the successive subtraction.

We have:

$$\begin{array}{r}
729 \\
\underline{1} \\
728 \\
\underline{7} \\
721 \\
\underline{19} \\
702 \\
\underline{37} \\
665 \\
\underline{61} \\
604 \\
\underline{91} \\
513 \\
\underline{127} \\
386 \\
\underline{169} \\
217 \\
\underline{217} \\
0
\end{array}$$

∴ The subtraction is performed 9 times.

$$\therefore \sqrt[3]{729} = 9$$

Thus, it is perfect cube.

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