



Exercise 4C

Q1

Answer :

$$\sqrt[3]{64}$$

By prime factorisation:

$$\begin{aligned} 64 &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \\ &= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \end{aligned}$$

$$\therefore \sqrt[3]{64} = \sqrt[3]{(2)^3 \times (2)^3} = (2 \times 2) = 4$$

Q2

Answer :

$$\sqrt[3]{343}$$

By prime factorisation:

$$\begin{aligned} 343 &= 7 \times 7 \times 7 \\ &= (7 \times 7 \times 7) \end{aligned}$$

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

Q3

Answer :

$$\sqrt[3]{729}$$

By prime factorisation:

$$\begin{array}{r|l} 3 & 729 \\ \hline 3 & 243 \end{array}$$

$$\begin{array}{r|l}
 3 & 729 \\
 \hline
 3 & 81 \\
 \hline
 3 & 27 \\
 \hline
 3 & 9 \\
 \hline
 3 & 3 \\
 \hline
 & 1
 \end{array}$$

$$\begin{aligned}
 729 &= 3 \times 3 \times 3 \times 3 \times 3 \times 3 \\
 &= (3 \times 3 \times 3) \times (3 \times 3 \times 3)
 \end{aligned}$$

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

Q4

Answer :

$$\sqrt[3]{1728}$$

By prime factorisation:

$$\begin{array}{r|l}
 2 & 1728 \\
 \hline
 2 & 864 \\
 \hline
 2 & 432 \\
 \hline
 2 & 216 \\
 \hline
 2 & 108 \\
 \hline
 2 & 54 \\
 \hline
 3 & 27 \\
 \hline
 3 & 9 \\
 \hline
 3 & 3 \\
 \hline
 & 1
 \end{array}$$

$$\begin{aligned}
 1728 &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \\
 &= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (3 \times 3 \times 3) = 2^3 \times 2^3 \times 3^3
 \end{aligned}$$

$$\therefore \sqrt[3]{1728} = (2 \times 2 \times 3) = 12$$

Q5

Answer :

$$\sqrt[3]{9261}$$

By prime factorisation:

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

$$\begin{aligned} 9261 &= 3 \times 3 \times 3 \times 7 \times 7 \times 7 \\ &= (3 \times 3 \times 3) \times (7 \times 7 \times 7) = 3^3 \times 7^3 \end{aligned}$$

$$\therefore \sqrt[3]{9261} = (3 \times 7) = 21$$

Q6

Answer :

$$\sqrt[3]{4096}$$

By prime factorisation:

$$\begin{array}{r|l} 2 & 4096 \\ \hline 2 & 2048 \\ \hline 2 & 1024 \\ \hline 2 & 512 \\ \hline 2 & 256 \\ \hline 2 & 128 \\ \hline 2 & 64 \\ \hline 2 & 32 \\ \hline 2 & 16 \\ \hline 2 & 8 \\ \hline 2 & 4 \\ \hline 2 & 2 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 4096 &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \\ &= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \\ &= 2^3 \times 2^3 \times 2^3 \times 2^3 \end{aligned}$$

$$\therefore \sqrt[3]{4096} = (2 \times 2 \times 2 \times 2) = 16$$

Q7

Answer :

$$\sqrt[3]{8000}$$

By prime factorisation:

$$\begin{array}{r|l} 2 & 8000 \\ \hline 2 & 4000 \\ \hline 2 & 2000 \\ \hline 2 & 1000 \\ \hline 2 & 500 \\ \hline 2 & 250 \\ \hline 5 & 125 \\ \hline 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 8000 &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5 \\ &= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (5 \times 5 \times 5) \end{aligned}$$

$$\therefore \sqrt[3]{8000} = (2 \times 2 \times 5) = 20$$

Q8

Answer :

$$\sqrt[3]{3375}$$

By prime factorisation:

$$\begin{array}{r|l} 5 & 3375 \\ \hline 5 & 675 \\ \hline 5 & 135 \\ \hline 3 & 27 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 3375 &= 3 \times 3 \times 3 \times 5 \times 5 \times 5 \\ &= (3 \times 3 \times 3) \times (5 \times 5 \times 5) \end{aligned}$$

$$\therefore \sqrt[3]{3375} = (3 \times 5) = 15$$

Q9

Answer :

$$\sqrt[3]{-216}$$

By prime factorisation:

*****END*****