

Practice

1. Use prime factorization to find each square root.

a) $\sqrt{225}$

$$\begin{aligned} 225 &= \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \\ &= (\underline{\quad} \times \underline{\quad}) \times (\underline{\quad} \times \underline{\quad}) \\ &= \underline{\quad} \times \underline{\quad} \end{aligned}$$

So, $\sqrt{225} = \underline{\quad}$

$$\begin{array}{c} 225 \\ \swarrow \quad \searrow \\ 3 \quad \times \end{array}$$

b) $\sqrt{196}$

$$\begin{aligned} 196 &= \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \\ &= (\underline{\quad} \times \underline{\quad}) \times (\underline{\quad} \times \underline{\quad}) \\ &= \underline{\quad} \times \underline{\quad} \end{aligned}$$

So, $\sqrt{196} = \underline{\quad}$

$$\begin{array}{c} 196 \\ \swarrow \quad \searrow \\ 2 \quad \times \end{array}$$

c) $\sqrt{1225}$

$$\begin{aligned} 1225 &= \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \\ &= (\underline{\quad} \times \underline{\quad}) \times (\underline{\quad} \times \underline{\quad}) \\ &= \underline{\quad} \times \underline{\quad} \end{aligned}$$

So, $\sqrt{1225} = \underline{\quad}$

$$\begin{array}{c} 1225 \\ \swarrow \quad \searrow \end{array}$$

2. Use prime factorization to find each cube root.

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

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

So, $\sqrt[3]{729} = \underline{\quad}$

$$\begin{array}{c} 729 \\ \swarrow \quad \searrow \\ 3 \quad \times \end{array}$$

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

$$\begin{aligned} 3375 &= \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \\ &= (\underline{\quad} \times \underline{\quad}) \times (\underline{\quad} \times \underline{\quad}) \times (\underline{\quad} \times \underline{\quad}) \\ &= \underline{\quad} \times \underline{\quad} \times \underline{\quad} \end{aligned}$$

So, $\sqrt[3]{3375} = \underline{\quad}$

$$\begin{array}{c} 3375 \\ \swarrow \quad \searrow \\ 3 \quad \times \end{array}$$