

Try This 3 Possible Solutions

TT 3. *Foundations and Pre-calculus Mathematics 10* (Pearson), questions 4, 5, 11.a), 11.b), 11.c), 11.d), 12.a), 12.b), 12.c), and 12.d) on page 218

$$\begin{aligned} 4. \text{ a) } \sqrt{8} &= \sqrt{(4)(2)} \\ &= \sqrt{(2^2)(2)} \\ &= \sqrt{2^2} \sqrt{2} \\ &= 2\sqrt{2} \end{aligned}$$

$$\begin{aligned} 4. \text{ b) } \sqrt{12} &= \sqrt{(4)(3)} \\ &= \sqrt{(2^2)(3)} \\ &= \sqrt{2^2} \sqrt{3} \\ &= 2\sqrt{3} \end{aligned}$$

$$\begin{aligned} 4. \text{ c) } \sqrt{32} &= \sqrt{(16)(2)} \\ &= \sqrt{(4^2)(2)} \\ &= \sqrt{4^2} \sqrt{2} \\ &= 4\sqrt{2} \end{aligned}$$

$$\begin{aligned} 4. \text{ d) } \sqrt{50} &= \sqrt{(25)(2)} \\ &= \sqrt{(5^2)(2)} \\ &= \sqrt{5^2} \sqrt{2} \\ &= 5\sqrt{2} \end{aligned}$$

$$\begin{aligned} 4. \text{ e) } \sqrt{18} &= \sqrt{(9)(2)} \\ &= \sqrt{(3^2)(2)} \\ &= \sqrt{3^2} \sqrt{2} \\ &= 3\sqrt{2} \end{aligned}$$

$$\begin{aligned}
 4. \quad \mathbf{f)} \quad \sqrt{27} &= \sqrt{(9)(3)} \\
 &= \sqrt{(3^2)(3)} \\
 &= \sqrt{3^2} \sqrt{3} \\
 &= 3\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 4. \quad \mathbf{g)} \quad \sqrt{48} &= \sqrt{(16)(3)} \\
 &= \sqrt{(4^2)(3)} \\
 &= \sqrt{4^2} \sqrt{3} \\
 &= 4\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 4. \quad \mathbf{h)} \quad \sqrt{75} &= \sqrt{(25)(3)} \\
 &= \sqrt{(5^2)(3)} \\
 &= \sqrt{5^2} \sqrt{3} \\
 &= 5\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad \mathbf{a)} \quad 5\sqrt{2} &= \sqrt{5^2} \sqrt{2} \\
 &= \sqrt{(5^2)(2)} \\
 &= \sqrt{(25)(2)} \\
 &= \sqrt{50}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad \mathbf{b)} \quad 6\sqrt{2} &= \sqrt{6^2} \sqrt{2} \\
 &= \sqrt{(6^2)(2)} \\
 &= \sqrt{(36)(2)} \\
 &= \sqrt{72}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad \mathbf{c)} \quad 7\sqrt{2} &= \sqrt{7^2} \sqrt{2} \\
 &= \sqrt{(7^2)(2)} \\
 &= \sqrt{(49)(2)} \\
 &= \sqrt{98}
 \end{aligned}$$

$$\begin{aligned}
 \text{5. d)} \quad 8\sqrt{2} &= \sqrt{8^2} \sqrt{2} \\
 &= \sqrt{(8^2)(2)} \\
 &= \sqrt{(64)(2)} \\
 &= \sqrt{128}
 \end{aligned}$$

$$\begin{aligned}
 \text{5. e)} \quad 5\sqrt{3} &= \sqrt{5^2} \sqrt{3} \\
 &= \sqrt{(5^2)(3)} \\
 &= \sqrt{(25)(3)} \\
 &= \sqrt{75}
 \end{aligned}$$

$$\begin{aligned}
 \text{5. f)} \quad 6\sqrt{3} &= \sqrt{6^2} \sqrt{3} \\
 &= \sqrt{(6^2)(3)} \\
 &= \sqrt{(36)(3)} \\
 &= \sqrt{108}
 \end{aligned}$$

$$\begin{aligned}
 \text{5. g)} \quad 7\sqrt{3} &= \sqrt{7^2} \sqrt{3} \\
 &= \sqrt{(7^2)(3)} \\
 &= \sqrt{(49)(3)} \\
 &= \sqrt{147}
 \end{aligned}$$

$$\begin{aligned}
 \text{5. h)} \quad 8\sqrt{3} &= \sqrt{8^2} \sqrt{3} \\
 &= \sqrt{(8^2)(3)} \\
 &= \sqrt{(64)(3)} \\
 &= \sqrt{192}
 \end{aligned}$$

$$\begin{aligned}
 \text{11. a)} \quad \sqrt[3]{16} &= \sqrt[3]{(8)(2)} \\
 &= \sqrt[3]{(2^3)(2)} \\
 &= \sqrt[3]{2^3} \sqrt[3]{2} \\
 &= 2\sqrt[3]{2}
 \end{aligned}$$

$$\begin{aligned}
 11. \text{ b) } \sqrt[3]{81} &= \sqrt[3]{(27)(3)} \\
 &= \sqrt[3]{(3^3)(3)} \\
 &= \sqrt[3]{3^3} \sqrt[3]{3} \\
 &= 3\sqrt[3]{3}
 \end{aligned}$$

$$\begin{aligned}
 11. \text{ c) } \sqrt[3]{256} &= \sqrt[3]{(64)(4)} \\
 &= \sqrt[3]{(4^3)(4)} \\
 &= \sqrt[3]{4^3} \sqrt[3]{4} \\
 &= 4\sqrt[3]{4}
 \end{aligned}$$

$$\begin{aligned}
 11. \text{ d) } \sqrt[3]{128} &= \sqrt[3]{(64)(2)} \\
 &= \sqrt[3]{(4^3)(2)} \\
 &= \sqrt[3]{4^3} \sqrt[3]{2} \\
 &= 4\sqrt[3]{2}
 \end{aligned}$$

$$\begin{aligned}
 12. \text{ a) } 3\sqrt{2} &= \sqrt{3^2} \sqrt{2} \\
 &= \sqrt{(3^2)(2)} \\
 &= \sqrt{(9)(2)} \\
 &= \sqrt{18}
 \end{aligned}$$

$$\begin{aligned}
 12. \text{ b) } 4\sqrt{2} &= \sqrt{4^2} \sqrt{2} \\
 &= \sqrt{(4^2)(2)} \\
 &= \sqrt{(16)(2)} \\
 &= \sqrt{32}
 \end{aligned}$$

$$\begin{aligned}
 12. \text{ c) } 6\sqrt{5} &= \sqrt{6^2} \sqrt{5} \\
 &= \sqrt{(6^2)(5)} \\
 &= \sqrt{(36)(5)} \\
 &= \sqrt{180}
 \end{aligned}$$

12. d) $5\sqrt{6} = \sqrt{5^2}\sqrt{6}$
 $= \sqrt{(5^2)(6)}$
 $= \sqrt{(25)(6)}$
 $= \sqrt{150}$