

Key Concept and Vocabulary

Product Property of Square Roots

Algebra: $\sqrt{xy} = \sqrt{x} \cdot \sqrt{y}$, where $x, y \geq 0$

Numbers: $\sqrt{12} = \sqrt{4 \cdot 3} = \sqrt{4} \cdot \sqrt{3} = 2\sqrt{3}$



Quotient Property of Square Roots

Algebra: $\sqrt{\frac{x}{y}} = \frac{\sqrt{x}}{\sqrt{y}}$, where $x \geq 0$ and $y > 0$

Numbers: $\sqrt{\frac{7}{9}} = \frac{\sqrt{7}}{\sqrt{9}} = \frac{\sqrt{7}}{3}$

Skill Examples

1. $\sqrt{18} = \sqrt{9 \cdot 2}$
 $= \sqrt{9} \cdot \sqrt{2}$
 $= 3\sqrt{2}$

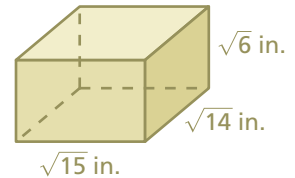
2. $\sqrt{75} = \sqrt{25 \cdot 3}$
 $= \sqrt{25} \cdot \sqrt{3}$
 $= 5\sqrt{3}$

3. $\sqrt{\frac{5}{36}} = \frac{\sqrt{5}}{\sqrt{36}}$
 $= \frac{\sqrt{5}}{6}$

Application Example

4. Find the volume of the rectangular prism.

$V = Bh$
 $= (\sqrt{15})(\sqrt{14})(\sqrt{6})$
 $= \sqrt{15 \cdot 14 \cdot 6}$
 $= \sqrt{1260}$
 $= \sqrt{36 \cdot 35}$
 $= \sqrt{36} \cdot \sqrt{35}$
 $= 6\sqrt{35}$



∴ The volume of the rectangular prism is $6\sqrt{35}$ cubic inches.



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Simplify the expression.

5. $\sqrt{80} = \underline{4\sqrt{5}}$

6. $\sqrt{216} = \underline{6\sqrt{6}}$

7. $\sqrt{92} = \underline{2\sqrt{23}}$

8. $\sqrt{245} = \underline{7\sqrt{5}}$

9. $\sqrt{\frac{13}{25}} = \underline{\frac{\sqrt{13}}{5}}$

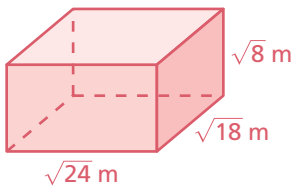
10. $\sqrt{\frac{29}{64}} = \underline{\frac{\sqrt{29}}{8}}$

11. $\sqrt{\frac{17}{100}} = \underline{\frac{\sqrt{17}}{10}}$

12. $\sqrt{\frac{40}{49}} = \underline{\frac{2\sqrt{10}}{7}}$

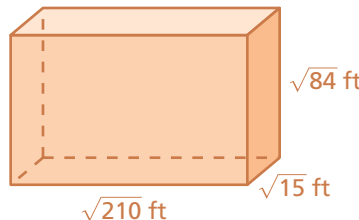
Find the volume of the rectangular prism.

13.



$V = \underline{24\sqrt{6}}$

14.



$V = \underline{210\sqrt{6}}$