



Lesson Check

Do you know HOW?

Simplify each radical expression.

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|--|---------------------------------|
| 1. $\sqrt{98}$ | 2. $\sqrt{16b^5}$ |
| 3. $3\sqrt{5m} \cdot 4\sqrt{\frac{1}{5}m^3}$ | 4. $\sqrt{\frac{15x}{x^3}}$ |
| 5. $\frac{\sqrt{5}}{\sqrt{3}}$ | 6. $\frac{\sqrt{6}}{\sqrt{2n}}$ |

Do you UNDERSTAND? MATHEMATICAL PRACTICES

7. **Vocabulary** Is the radical expression in simplified form? Explain.
 a. $\frac{\sqrt{31}}{3}$ b. $7\sqrt{\frac{6}{11}}$ c. $-5\sqrt{175}$
8. **Compare and Contrast** Simplify $\sqrt[3]{\frac{3}{12}}$ two different ways. Which way do you prefer? Explain.
9. **Writing** Explain how you can tell whether a radical expression is in simplified form.



Practice and Problem-Solving Exercises MATHEMATICAL PRACTICES

A Practice

Simplify each radical expression.

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| 10. $\sqrt{225}$ | 11. $\sqrt{99}$ | 12. $\sqrt{128}$ | 13. $-\sqrt{60}$ |
| 14. $-4\sqrt{117}$ | 15. $5\sqrt{700}$ | 16. $\sqrt{192s^2}$ | 17. $\sqrt{50t^5}$ |
| 18. $3\sqrt{18a^2}$ | 19. $-21\sqrt{27x^9}$ | 20. $3\sqrt{150b^8}$ | 21. $-2\sqrt{243y^3}$ |

See Problems 1 and 2.

Simplify each product.

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| 22. $\sqrt{8} \cdot \sqrt{32}$ | 23. $\frac{1}{3}\sqrt{6} \cdot \sqrt{24}$ | 24. $4\sqrt{10} \cdot 2\sqrt{90}$ |
| 25. $5\sqrt{6} \cdot \frac{1}{6}\sqrt{216}$ | 26. $-5\sqrt{21} \cdot (-3\sqrt{42})$ | 27. $\sqrt{18n} \cdot \sqrt{98n^3}$ |
| 28. $3\sqrt{5c} \cdot 7\sqrt{15c^2}$ | 29. $\sqrt{2y} \cdot \sqrt{128y^5}$ | 30. $-6\sqrt{15s^3} \cdot 2\sqrt{75}$ |
| 31. $-9\sqrt{28a^2} \cdot \frac{1}{3}\sqrt{63a}$ | 32. $10\sqrt{12x^3} \cdot 2\sqrt{6x^3}$ | 33. $-\frac{1}{3}\sqrt{18c^5} \cdot (-6\sqrt{8c^9})$ |

See Problem 3.

34. **Construction** Students are building rectangular wooden frames for the set of a school play. The height of a frame is 6 times the width w . Each frame has a brace that connects two opposite corners of the frame. What is a simplified expression for the length of a brace?

See Problem 4.

35. **Park** A park is shaped like a rectangle with a length 5 times its width w . What is a simplified expression for the distance between opposite corners of the park?

Simplify each radical expression.

See Problems 5 and 6.

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| 36. $\sqrt{\frac{16}{25}}$ | 37. $7\sqrt{\frac{6}{32}}$ | 38. $-4\sqrt{\frac{100}{729}}$ | 39. $\sqrt{\frac{3x^3}{64x^2}}$ |
| 40. $-5\sqrt{\frac{162t^3}{2t}}$ | 41. $11\sqrt{\frac{49a^5}{4a^3}}$ | 42. $\frac{1}{\sqrt{11}}$ | 43. $\frac{\sqrt{5}}{\sqrt{8x}}$ |
| 44. $\frac{3\sqrt{6}}{\sqrt{15}}$ | 45. $\frac{22}{\sqrt{11}}$ | 46. $\frac{2\sqrt{24}}{\sqrt{48t^4}}$ | 47. $\frac{8\sqrt{7s}}{\sqrt{28s^3}}$ |