

Practice 7-2

Multiplying and Dividing Radical Expressions

Multiply and simplify. Assume that all variables are positive.

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|----------------------------------|------------------------------------|--|
| 1. $\sqrt{4} \cdot \sqrt{6}$ | 2. $\sqrt{9x^2} \cdot \sqrt{9y^5}$ | 3. $\sqrt[3]{50x^2z^5} \cdot \sqrt[3]{15y^3z}$ |
| 4. $4\sqrt{2x} \cdot 3\sqrt{8x}$ | 5. $\sqrt{xy} \cdot \sqrt{4xy}$ | 6. $9\sqrt{2} \cdot 3\sqrt{y}$ |

Rationalize the denominator of each expression. Assume that all variables are positive.

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|---|----------------------------------|-------------------------------|
| 7. $\sqrt{\frac{9x}{2}}$ | 8. $\frac{\sqrt{xy}}{\sqrt{3x}}$ | 9. $\sqrt{\frac{x^2}{3y}}$ |
| 10. $\frac{\sqrt[4]{2x}}{\sqrt[4]{3x^2}}$ | 11. $\sqrt{\frac{x}{8y}}$ | 12. $\sqrt{\frac{3a}{4b^2c}}$ |

Multiply. Simplify if possible. Assume that all variables are positive.

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|--------------------------------------|-----------------------------------|---|
| 13. $\sqrt{4} \cdot \sqrt{25}$ | 14. $\sqrt{81} \cdot \sqrt{36}$ | 15. $\sqrt{3} \cdot \sqrt{27}$ |
| 16. $\sqrt[3]{-3} \cdot \sqrt[3]{9}$ | 17. $\sqrt{3x} \cdot \sqrt{6x^3}$ | 18. $\sqrt[3]{2xy^2} \cdot \sqrt[3]{4x^2y^7}$ |

Simplify. Assume that all variables are positive.

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|---------------------------|---------------------------|------------------------------|
| 19. $\sqrt{36x^3}$ | 20. $\sqrt[3]{125y^2z^4}$ | 21. $\sqrt{18k^6}$ |
| 22. $\sqrt[3]{-16a^{12}}$ | 23. $\sqrt{x^2y^{10}z}$ | 24. $\sqrt[4]{256s^7t^{12}}$ |
| 25. $\sqrt[3]{216x^4y^3}$ | 26. $\sqrt{75r^3}$ | 27. $\sqrt[4]{625u^5v^8}$ |

Divide and simplify. Assume that all variables are positive.

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|---|---|-------------------------------------|
| 28. $\frac{\sqrt{6x}}{\sqrt{3x}}$ | 29. $\frac{\sqrt[3]{4x^2}}{\sqrt[3]{x}}$ | 30. $\sqrt[4]{\frac{243k^3}{3k^7}}$ |
| 31. $\frac{\sqrt{(2x)^2}}{\sqrt{(5y)^4}}$ | 32. $\frac{\sqrt[3]{18y^2}}{\sqrt[3]{12y}}$ | 33. $\sqrt{\frac{162a}{6a^3}}$ |

34. The volume of a sphere of radius r is $V = \frac{4}{3}\pi r^3$.
- Use the formula to find r in terms of V . Rationalize the denominator.
 - Use your answer to part (a) to find the radius of a sphere with volume 100 cubic inches. Round to the nearest hundredth.

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