

EXTRA PRACTICE 39**Multiplying, Dividing, and Simplifying Radical Expressions****Use after Section 10.3**

Name _____

Examples: Simplify. Assume that all expressions represent nonnegative numbers.

a) $\sqrt[3]{320x^6y^4z^2}$	b) $\sqrt[4]{(81a^8b^4)^2}$	c) $\sqrt{\frac{75y^5}{16x^2}}$
$= \sqrt[3]{64 \cdot 5 \cdot x^6 \cdot y^3 \cdot y \cdot z^2}$	$= \left(\sqrt[4]{3^4 a^8 b^4}\right)^2$	$= \frac{\sqrt{75y^5}}{\sqrt{16x^2}}$
$= \sqrt[3]{64x^6y^3} \sqrt[3]{5yz^2}$	$= (3a^2b)^2$	$= \frac{\sqrt{25y^4 \cdot 3y}}{\sqrt{16x^2}}$
$= 4x^2y \sqrt[3]{5yz^2}$	$= 9a^4b^2$	$= \frac{5y^2\sqrt{3y}}{4x}$

Simplify. Assume that all expressions represent nonnegative numbers.

1. $\sqrt{20x^3yz^2} =$ _____	2. $\sqrt[3]{128x^4y^2} =$ _____
3. $\sqrt[4]{a^{16}b^{12}} =$ _____	4. $\sqrt{\frac{49a^3}{b^4}} =$ _____
5. $\sqrt{45a^3bc^2} =$ _____	6. $\sqrt{16^3} =$ _____
7. $\sqrt[3]{\frac{16x^5}{y^6}} =$ _____	8. $\sqrt[4]{64a^7b^{12}} =$ _____
9. $\sqrt{50a^2b^5} =$ _____	10. $\sqrt[5]{(32x^{10})^3} =$ _____
11. $\sqrt{\frac{16x^3}{81}} =$ _____	12. $\sqrt{500x^2yz^{11}} =$ _____
13. $\sqrt[3]{216^2} =$ _____	14. $\sqrt[3]{\frac{64a^7}{27}} =$ _____
15. $\sqrt[3]{240x^4y^5} =$ _____	16. $\sqrt[4]{x^7y^9z^{12}} =$ _____
17. $\sqrt{\frac{24x^3}{25}} =$ _____	18. $\sqrt[4]{256^3} =$ _____
19. $\sqrt[5]{(32a^5b^{10})^3} =$ _____	20. $\sqrt[3]{(54a^3)^2} =$ _____

EXTRA PRACTICE 39 (continued)
Multiplying, Dividing, and Simplifying Radical Expressions
Use after Section 10.3

Examples: Assume that all expressions represent nonnegative numbers.

a) Multiply and simplify.

$$\begin{aligned} & \sqrt{32xy^3} \sqrt{4x^2y^5} \\ &= \sqrt{128x^3y^8} \\ &= \sqrt{64 \cdot 2 \cdot x^2 \cdot x \cdot y^8} \\ &= \sqrt{64x^2y^8} \sqrt{2x} \\ &= 8xy^4 \sqrt{2x} \end{aligned}$$

b) Divide and simplify.

$$\begin{aligned} & \frac{\sqrt[3]{56a^5b^{14}}}{\sqrt[3]{7ab^5}} \\ &= \sqrt[3]{\frac{56a^5b^{14}}{7ab^5}} \\ &= \sqrt[3]{8a^4b^9} \\ &= \sqrt[3]{8 \cdot a^3 \cdot a \cdot b^9} = 2ab^3 \sqrt[3]{a} \end{aligned}$$

Multiply or divide and simplify. Assume that all expressions represent nonnegative numbers.

$$21. \sqrt[3]{5(x+2)^2} \sqrt[3]{25(x+2)^2} = \underline{\hspace{2cm}} \qquad 22. \frac{\sqrt{32a^5b^3}}{\sqrt{2ab^2}} = \underline{\hspace{2cm}}$$

$$23. \frac{6\sqrt{45x^3}}{3\sqrt{5x}} = \underline{\hspace{2cm}} \qquad 24. \sqrt[3]{x^7} \sqrt[3]{64xy^2} = \underline{\hspace{2cm}}$$

$$25. \sqrt{8x^3y} \sqrt{3xy^2} = \underline{\hspace{2cm}} \qquad 26. \frac{\sqrt[3]{81a^5b^8}}{\sqrt[3]{3ab^2}} = \underline{\hspace{2cm}}$$

$$27. \frac{\sqrt[3]{625x^6y^4}}{\sqrt[3]{5xy}} = \underline{\hspace{2cm}} \qquad 28. \sqrt{6(x+3)^3} \sqrt{3(x+3)} = \underline{\hspace{2cm}}$$

$$29. \sqrt[3]{6^5a^2b^3} \sqrt[3]{6^2ab} = \underline{\hspace{2cm}} \qquad 30. \frac{\sqrt[3]{27xy^7}}{\sqrt[3]{xy}} = \underline{\hspace{2cm}}$$

$$31. \frac{9 \sqrt[5]{160x^8y^{11}}}{3 \sqrt[5]{5xy^2}} = \underline{\hspace{2cm}} \qquad 32. \sqrt[3]{4(y-3)^2} \sqrt[3]{2(y-3)^5} = \underline{\hspace{2cm}}$$