7-5

Practice

Form K

Rational Exponents and Radicals

What is the value of each expression? The first one has been started for you.

1. $\sqrt{36} = \sqrt{6 \cdot 6}$

2. $\sqrt{100}$

3. $\sqrt[3]{64}$

4. $\sqrt[3]{125}$

5. $\sqrt[3]{1}$

6. $\sqrt[4]{256}$

Write each expression in radical form. The first one has been started for you.

7. $x^{\frac{1}{2}} = \sqrt[2]{x^1}$

8. $(25x^2)^{\frac{1}{2}}$

9. $x^{\frac{2}{3}}$

10. $15x^{\frac{3}{4}}$

11. $(27x^3)^{\frac{1}{3}}$

12. $16t^{\frac{1}{5}}$

Write each expression in exponential form.

13. $\sqrt[3]{x}$

14. $\sqrt{a^3}$

15. $\sqrt{16a}$

16. $\sqrt{(49w)^2}$

17. $\sqrt[3]{125d^2}$

18. $\sqrt{(2m)^4}$

7-5

Practice (continued)   *Form K*

Rational Exponents and Radicals

Simplify each expression using the properties of exponents, and then write the expression in radical form.

19. $\left(x^{\frac{1}{3}}\right)\left(x^{\frac{2}{3}}\right)$

20. $\left(a^{\frac{1}{5}}\right)\left(a^{\frac{3}{5}}\right)$

21. $(ab)^{\frac{1}{3}}(b)^{\frac{1}{3}}$

22. $(16x)^{\frac{1}{2}}\left(x^{\frac{1}{3}}\right)$

**Write each expression in exponential form. Simplify when possible.**

23. $2\sqrt[3]{a} + 3\sqrt[3]{a}$

24. $3\sqrt[4]{b} - \sqrt[3]{b}$

25. Error Analysis A student simplifies the expression $(64x)^{\frac{2}{3}}$ as follows:

$(64x)^{\frac{2}{3}} = \sqrt[3]{(64x)^2} = \sqrt[3]{4096x^2} = 16x^{\frac{3}{2}}$. What mistake did the student make in simplifying the expression? What is the correct simplification?

26. Geometry Find the area of the figure. Write the answer in radical form.

$(4x)^{\frac{3}{2}}$

$12x^{\frac{3}{4}}$
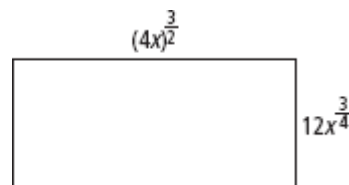
27. Reasoning Show that $\sqrt[3]{x^3} = x$ by rewriting $\sqrt[3]{x^3}$ in exponential form.