

**7-5****Practice B**

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

**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.**

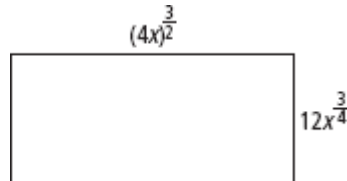
23.  $2\sqrt[3]{a} + 3\sqrt[3]{a}$

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.



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