# Rational Exponent Practice 2DO WORK ON A SEPARATE SHEET OF PAPER

# Simplify each expression.

1. 
$$36^{\frac{1}{2}}$$

2. 
$$27^{\frac{1}{3}}$$

**4.** 
$$10^{\frac{1}{2}} \cdot 10^{\frac{1}{2}}$$

**5.** 
$$(-3)^{\frac{1}{3}} \cdot (-3)^{\frac{1}{3}} \cdot (-3)^{\frac{1}{3}}$$
 **6.**  $3^{\frac{1}{2}} \cdot 12^{\frac{1}{2}}$ 

6. 
$$3^{\frac{1}{2}} \cdot 12^{\frac{1}{2}}$$

7. 
$$2^{\frac{1}{2}} \cdot 32^{\frac{1}{2}}$$

8. 
$$3^{\frac{1}{3}} \cdot 9^{\frac{1}{3}}$$

9. 
$$3^{\frac{1}{4}} \cdot 27^{\frac{1}{4}}$$

# Write each expression in radical form.

**10.** 
$$x^{\frac{1}{6}}$$

11. 
$$x^{\frac{1}{5}}$$

12. 
$$x^{\frac{2}{7}}$$
 13.  $y^{\frac{2}{5}}$ 

13. 
$$v^{\frac{2}{5}}$$

**14.** 
$$y^{-\frac{9}{8}}$$

15. 
$$t^{-\frac{3}{4}}$$

**15.** 
$$t^{-\frac{3}{4}}$$
 **16.**  $x^{1.5}$ 

17. 
$$v^{1.2}$$

### Write each expression in exponential form.

**18.** 
$$\sqrt{-10}$$

**19.** 
$$\sqrt{7x^3}$$

**19.** 
$$\sqrt{7x^3}$$
 **20.**  $\sqrt{(7x)^3}$  **21.**  $(\sqrt{7x})^3$ 

**21.** 
$$(\sqrt{7x})^3$$

**22.** 
$$\sqrt[3]{a^2}$$

**23.** 
$$(\sqrt[3]{a})^2$$

**24.** 
$$\sqrt[4]{c^2}$$

**23.** 
$$(\sqrt[4]{a})^2$$
 **24.**  $\sqrt[4]{c^2}$  **25.**  $\sqrt[3]{(5xy)^6}$ 

#### Write each expression in simplest form. Assume that all variables are positive.

**38.** 
$$(x^{\frac{2}{3}})^{-}$$

39. 
$$(x^{-\frac{4}{7}})^{\frac{1}{7}}$$

**40.** 
$$(3x^{\frac{2}{3}})^{-1}$$

**38.** 
$$(x^{\frac{2}{3}})^{-3}$$
 **39.**  $(x^{-\frac{4}{7}})^{7}$  **40.**  $(3x^{\frac{2}{3}})^{-1}$  **41.**  $5(x^{\frac{2}{3}})^{-1}$ 

**42.** 
$$(-27x^{-9})^{-1}$$

**43.** 
$$(-32y^{15})^{\frac{1}{5}}$$

**42.** 
$$(-27x^{-9})^{\frac{1}{3}}$$
 **43.**  $(-32y^{15})^{\frac{1}{5}}$  **44.**  $\left(\frac{x^3}{x^{-1}}\right)^{-\frac{1}{4}}$  **45.**  $\left(\frac{x^2}{x^{-11}}\right)^{\frac{1}{3}}$ 

**45.** 
$$\left(\frac{x^2}{x^{-11}}\right)^{\frac{1}{3}}$$

**46.** 
$$\left(x^{\frac{1}{2}}y^{-\frac{2}{3}}\right)^{-6}$$

**47.** 
$$\left(x^{\frac{2}{3}}y^{-\frac{1}{6}}\right)^{-12}$$

**48.** 
$$\left(\frac{x^{\frac{1}{4}}}{y^{-\frac{3}{4}}}\right)^{12}$$

**46.** 
$$\left(x^{\frac{1}{2}}y^{-\frac{2}{3}}\right)^{-6}$$
 **47.**  $\left(x^{\frac{2}{3}}y^{-\frac{1}{6}}\right)^{-12}$  **48.**  $\left(\frac{x^{\frac{1}{4}}}{y^{-\frac{3}{4}}}\right)^{12}$  **49.**  $\left(\frac{x^{-\frac{2}{3}}}{y^{-\frac{1}{3}}}\right)^{15}$ 

$$27) \ \frac{4x^0y^{-2}z^3}{4x}$$

$$28) \ \frac{2h^3j^{-3}k^4}{3jk}$$

$$29) \ \frac{4m^4n^3p^3}{3m^2n^2p^4}$$

$$30) \ \frac{3x^3y^{-1}z^{-1}}{x^{-4}y^0z^0}$$

16) 
$$\frac{2}{n+8} + \frac{4}{n+1}$$

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$$\frac{v^2 - 5v - 14}{v^2 + 4v + 4}$$

16) 
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