NAME _____ DATE _____ PERIOD _____

Practice

Rational Exponents

Evaluate each expression.

1. $\dfrac{8^{\frac{2}{3}}}{8^{\frac{1}{3}}}$

2. $\left(\dfrac{4}{5}\right)^{-2}$

3. $343^{\frac{2}{3}}$

4. $\sqrt[3]{8^3}$

5. $\sqrt{5} \cdot \sqrt{10}$

6. $9^{-\frac{1}{2}}$

Simplify each expression.

7. $(5n^3)^2 \cdot n^{-6}$

8. $\left(\dfrac{x^2}{4y^{-2}}\right)^{-\frac{1}{2}}$

9. $(64x^6)^{\frac{1}{3}}$

10. $(5x^6y^4)^{\frac{1}{2}}$

11. $\sqrt{x^2y^3} \cdot \sqrt{x^3y^4}$

12. $\left(\dfrac{p^{6a}}{p^{-3a}}\right)^{\frac{1}{3}}$

Express each using rational exponents.

13. $\sqrt{x^5y^6}$

14. $\sqrt[5]{27x^{10}y^5}$

15. $\sqrt{144x^6y^{10}}$

16. $21\sqrt[3]{c^7}$

17. $\sqrt{1024a^3}$

18. $\sqrt[4]{36a^8b^5}$

Express each using radicals.

19. $64^{\frac{1}{3}}$

20. $2^{\frac{1}{2}}a^{\frac{3}{2}}b^{\frac{5}{2}}$

21. $s^{\frac{2}{3}}t^{\frac{1}{3}}v^{\frac{2}{3}}$

22. $y^{\frac{3}{2}}$

23. $x^{\frac{2}{5}}y^{\frac{3}{5}}$

24. $(x^6y^3)^{\frac{1}{2}}z^{\frac{3}{2}}$