

**7-6****Skills Practice****Rational Exponents**

Write each expression in radical form.

1.  $3^{\frac{1}{6}}$

2.  $8^{\frac{1}{5}}$

3.  $12^{\frac{2}{3}}$

4.  $(s^3)^{\frac{3}{5}}$

Write each radical using rational exponents.

5.  $\sqrt{51}$

6.  $\sqrt[3]{37}$

7.  $\sqrt[4]{15^3}$

8.  $\sqrt[3]{6xy^2}$

Evaluate each expression.

9.  $32^{\frac{1}{5}}$

10.  $81^{\frac{1}{4}}$

11.  $27^{-\frac{1}{3}}$

12.  $4^{-\frac{1}{2}}$

13.  $16^{\frac{3}{2}}$

14.  $(-243)^{\frac{4}{5}}$

15.  $27^{\frac{1}{3}} \cdot 27^{\frac{5}{3}}$

16.  $\left(\frac{4}{9}\right)^{\frac{3}{2}}$

Simplify each expression.

17.  $c^{\frac{12}{5}} \cdot c^{\frac{3}{5}}$

18.  $m^{\frac{2}{9}} \cdot m^{\frac{16}{9}}$

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

20.  $p^{-\frac{1}{5}}$

21.  $x^{-\frac{6}{11}}$

22.  $\frac{x^{\frac{2}{3}}}{x^{\frac{1}{4}}}$

23.  $\frac{y^{-\frac{1}{2}}}{y^{\frac{1}{4}}}$

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

25.  $\sqrt[12]{64}$

26.  $\sqrt[8]{49a^8b^2}$

<p style="text-align: center;"><b>7-6 Skills Practice</b> <i>Rational Exponents</i></p> <p>Write each expression in radical form.</p> <p>1. <math>3^{\frac{2}{3}} \sqrt[3]{3}</math>      2. <math>8^{\frac{1}{5}} \sqrt[5]{8}</math>      3. <math>12^{\frac{2}{3}} \sqrt[3]{12^2}</math> or <math>(\sqrt[3]{12})^2</math> or <math>2\sqrt[3]{18}</math>      4. <math>(s^3)^{\frac{3}{5}} s^{\sqrt[5]{s^4}}</math></p> <p>Write each radical using rational exponents.</p> <p>5. <math>\sqrt[5]{51} 51^{\frac{1}{5}}</math>      6. <math>\sqrt[3]{37} 37^{\frac{1}{3}}</math>      7. <math>\sqrt[4]{15^3} 15^{\frac{3}{4}}</math>      8. <math>\sqrt[3]{6xy^2} 6^{\frac{1}{3}} x^{\frac{1}{3}} y^{\frac{2}{3}}</math></p> <p>Evaluate each expression.</p> <p>9. <math>32^{\frac{1}{5}} 2</math>      10. <math>81^{\frac{1}{4}} 3</math>      11. <math>27^{-\frac{1}{3}} \frac{1}{3}</math>      12. <math>4^{-\frac{1}{2}} \frac{1}{2}</math>      13. <math>16^{\frac{3}{4}} 64</math>      14. <math>(-243)^{\frac{1}{5}} 81</math>      15. <math>27^{\frac{1}{3}} \cdot 27^{\frac{2}{3}} 729</math>      16. <math>(\frac{4}{9})^{\frac{3}{2}} \frac{8}{27}</math></p> <p>Simplify each expression.</p> <p>17. <math>c^{\frac{12}{5}} \cdot c^{\frac{3}{5}} c^9</math>      18. <math>m^{\frac{2}{3}} \cdot m^{\frac{10}{3}} m^2</math>      19. <math>(q^{\frac{1}{2}})^3 q^{\frac{3}{2}}</math>      20. <math>p^{-\frac{1}{6}} \frac{1}{p^{\frac{5}{6}}}</math> or <math>\frac{p^{\frac{5}{6}}}{p}</math>      21. <math>x^{-\frac{6}{11}} \frac{1}{x^{\frac{11}{11}}}</math> or <math>\frac{x^{\frac{5}{11}}}{x}</math>      22. <math>\frac{x^{\frac{2}{3}}}{x^{\frac{1}{3}}} x^{\frac{7}{3}}</math>      23. <math>\frac{y^{\frac{1}{2}}}{y^{\frac{1}{3}}} \frac{1}{y^{\frac{1}{6}}}</math> or <math>\frac{y^{\frac{1}{6}}}{y}</math>      24. <math>\frac{n^{\frac{1}{3}}}{n^{\frac{1}{6}}} \frac{1}{n^{\frac{1}{6}}}</math> or <math>\frac{n^{\frac{2}{6}}}{n^{\frac{1}{6}}}</math>      25. <math>\sqrt[3]{49a^8b^2}  a  \sqrt[4]{7b}</math>      26. <math>\sqrt[3]{49a^8b^2}  a  \sqrt[4]{7b}</math></p>	<p style="text-align: center;"><b>7-6 Practice</b> <i>Rational Exponents</i></p> <p>Write each expression in radical form.</p> <p>1. <math>5^{\frac{1}{3}} \sqrt[3]{5}</math>      2. <math>6^{\frac{2}{3}} \sqrt[3]{6^2}</math> or <math>(\sqrt[3]{6})^2</math>      3. <math>m^{\frac{4}{5}} \sqrt[5]{m^4}</math> or <math>(\sqrt[5]{m})^4</math>      4. <math>(n^3)^{\frac{2}{5}} n^{\frac{6}{5}}</math></p> <p>Write each radical using rational exponents.</p> <p>5. <math>\sqrt[7]{79} 79^{\frac{1}{7}}</math>      6. <math>\sqrt[4]{153} 153^{\frac{1}{4}}</math>      7. <math>\sqrt[3]{27m^6n^4} 3m^2n^{\frac{4}{3}}</math>      8. <math>5\sqrt[5]{2a^{10}b} 5 \cdot 2^{\frac{1}{5}}  a^2  b^{\frac{2}{5}}</math></p> <p>Evaluate each expression.</p> <p>9. <math>81^{\frac{1}{4}} 3</math>      10. <math>1024^{-\frac{1}{5}} \frac{1}{4}</math>      11. <math>8^{-\frac{6}{5}} \frac{1}{32}</math>      12. <math>-256^{-\frac{3}{4}} \frac{1}{-64}</math>      13. <math>(-64)^{-\frac{3}{2}} \frac{1}{16}</math>      14. <math>27^{\frac{1}{3}} \cdot 27^{\frac{2}{3}} 243</math>      15. <math>(\frac{125}{216})^{\frac{2}{3}} \frac{25}{36}</math>      16. <math>\frac{64^{\frac{3}{4}}}{343^{\frac{3}{4}}} \frac{16}{49}</math>      17. <math>(25^{\frac{1}{2}})^{-\frac{1}{2}} (-64^{-\frac{1}{3}}) -4</math>      18. <math>s^{\frac{4}{7}} \cdot g^{\frac{3}{7}} g</math>      19. <math>s^{\frac{13}{7}} \cdot s^{\frac{10}{7}} s^4</math>      20. <math>(u^{-\frac{1}{3}})^{-\frac{4}{3}} u^{\frac{4}{9}}</math>      21. <math>y^{-\frac{1}{2}} \frac{1}{y^{\frac{1}{2}}}</math> or <math>\frac{y^{\frac{1}{2}}}{y}</math>      22. <math>b^{-\frac{3}{8}} \frac{1}{b^{\frac{3}{8}}}</math> or <math>\frac{b^{\frac{3}{8}}}{b}</math>      23. <math>\frac{q^{\frac{7}{2}}}{q^{\frac{1}{2}}} q^{\frac{3}{2}}</math>      24. <math>\frac{t^{\frac{11}{2}}}{5t^{\frac{3}{2}} \cdot t^{-\frac{1}{2}}} \frac{t^{\frac{11}{2}}}{5}</math>      25. <math>\frac{2z^{\frac{1}{2}}}{z^{\frac{1}{2}} - 1} \frac{2z + 2z^2}{z - 1}</math>      26. <math>\sqrt[10]{6^5} 2\sqrt{2} 12\sqrt[10]{12}</math>      27. <math>\sqrt[12]{12} \cdot \sqrt[12]{12^3}</math>      28. <math>\sqrt[3]{6} \cdot 3\sqrt[3]{6} 3\sqrt[3]{6}</math>      29. <math>\sqrt[3]{3b} \frac{a\sqrt{3b}}{3b}</math></p> <p>30. <b>ELECTRICITY</b> The amount of current in amperes <math>I</math> that an appliance uses can be calculated using the formula <math>I = (\frac{P}{R})^{\frac{1}{2}}</math>, where <math>P</math> is the power in watts and <math>R</math> is the resistance in ohms. How much current does an appliance use if <math>P = 500</math> watts and <math>R = 10</math> ohms? Round your answer to the nearest tenth. <b>7.1 amps</b></p> <p>31. <b>BUSINESS</b> A company that produces DVDs uses the formula <math>C = 88n^{\frac{1}{3}} + 330</math> to calculate the cost <math>C</math> in dollars of producing <math>n</math> DVDs per day. What is the company's cost to produce 150 DVDs per day? Round your answer to the nearest dollar. <b>\$798</b></p>
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