Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_\_

Simplify each expression.

1. $125^{\frac{1}{3}}$ 2. $32^{\frac{1}{5}}$ 3. $7^{\frac{1}{2}}$

4. $3^{\frac{1}{2}}∙75^{\frac{1}{2}}$ 5. $7^{\frac{1}{2}}∙28^{\frac{1}{2}}$ 6. $8^{\frac{1}{4}}∙32^{\frac{1}{4}}$

7. $\left(-5\right)^{\frac{1}{3}}∙\left(-5\right)^{\frac{1}{3}}∙\left(-5\right)^{\frac{1}{3}}$ 8. $11^{\frac{1}{3}}∙11^{\frac{1}{3}}∙11^{\frac{1}{3}}$ 9. $12^{\frac{1}{3}}∙45^{\frac{1}{3}}∙50^{\frac{1}{3}}$

Write each expression in radical form.

10. $x^{\frac{4}{3}}$ 11. $z^{\frac{2}{3}}$ 12. $b^{\frac{1}{5}}$ 13. $t^{\frac{2}{7}}$

14. $\left(2y\right)^{\frac{1}{3}}$ 15. $\left(ab\right)^{\frac{1}{4}}$ 16. $m^{2.4}$ 17. $a^{-1.6}$

Write each expression in exponential form.

18. $\sqrt{x^{3}}$ 19. $\sqrt[3]{m}$ 20. $\sqrt{5y}$ 21. $\sqrt[3]{2y^{2}}$

22. $\left(\sqrt[4]{b}\right)^{3}$ 23. $\sqrt{\left(6a\right)^{4}}$ 24. $\sqrt[5]{n^{4}}$ 25. $\sqrt[4]{\left(5ab\right)^{7}}$

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

26. $\left(81^{\frac{1}{4}}\right)^{4}$ 27. $\left(256^{4}\right)^{\frac{1}{4}}$ 28. $7^{0}$ 29. $3.6^{0}$

30. $8^{\frac{2}{3}}$ 31. $\left(-27\right)^{\frac{2}{3}}$ 32. $x^{\frac{1}{2}}∙x^{\frac{1}{3}}$ 33. $2y^{\frac{1}{2}}∙y$

34. $y^{\frac{2}{3}}∙y^{\frac{3}{8}}$ 35. $\left(3x^{\frac{1}{2}}\right)\left(4x^{\frac{2}{3}}\right)$ 36. $\left(2x^{\frac{2}{5}}\right)\left(6x^{\frac{1}{4}}\right)$

37. $\left(\frac{1}{16}\right)^{\frac{1}{4}}$ 38. $\left(\frac{27}{8}\right)^{\frac{2}{3}}$ 39. $\left(a^{\frac{2}{3}}b^{-\frac{1}{2}}\right)^{-6}$ 40. $\left(3a^{\frac{1}{2}}b^{\frac{1}{3}}\right)^{2}$

41. $\frac{x^{\frac{4}{7}}}{x^{\frac{2}{3}}}$ 42. $y^{\frac{5}{8}}÷y^{\frac{1}{2}}$ 43. $\left(\frac{27x^{6}}{64y^{4}}\right)^{\frac{1}{3}}$ 44.$ \frac{x^{\frac{1}{2}}y^{\frac{2}{3}}}{x^{\frac{1}{3}}y^{\frac{1}{2}}}$

45. $\frac{x^{-\frac{1}{3}}y}{x^{\frac{2}{3}}y^{-\frac{1}{2}}}$ 46. $\left(\frac{12x^{8}}{75^{10}}\right)^{\frac{1}{2}}$

47. The rate of inflation I that raises the cost of an item from the present value P to the future value F over t years is found using the formula $i=\left(\frac{F}{P}\right)^{\frac{1}{t}}-1$. Round your answer to the nearest tenth.

a. What is the cost of inflation for which a television set costing $1000 today will become one costing $1500 in 3 years.

b. What is the rate of inflation that will result in the price P doubling ( F = 2P) in 10 years?