Name _____ Date _____

6.1 Practice A

In Exercises 1–6, evaluate the expression.

1. $(-3)^0$

2. 7^0

3. 3^{-5}

4. $(-5)^{-3}$

5. $\dfrac{3^{-2}}{9^0}$

6. $\dfrac{6^{-1}}{-5^0}$

In Exercises 7–18, simplify the expression. Write your answer using only positive exponents.

7. x^{-6}

8. z^0

9. $7x^{-4}y^0$

10. $12f^0g^{-9}$

11. $\dfrac{3^{-2}a^0}{b^{-2}}$

12. $\dfrac{6^0tu^{-5}}{2^5}$

13. $\dfrac{4^7}{4^4}$

14. $\dfrac{(-3)^6}{(-3)^3}$

15. $(-8)^3 \bullet (-8)^3$

16. $7^{-4} \bullet 7^4$

17. $\left(h^3\right)^4$

18. $\left(t^{-2}\right)^6$

19. A camera lens magnifies an object 10^3 times. The length of an object is 10^{-4} centimeter. What is its magnified length?

In Exercises 20–22, simplify the expression. Write your answer using only positive exponents.

20. $(-2y)^5$

21. $(3d)^{-3}$

22. $\left(\dfrac{5}{b}\right)^{-3}$

In Exercises 23 and 24, simplify the expression. Write your answer using only positive exponents.

23. $\left(\dfrac{3x^2y^{-3}}{2x^{-3}y^2}\right)^3$

24. $\left(\dfrac{-6a^{-9}b^5}{2a^2b^{-4}}\right)^4$

In Exercises 25 and 26, evaluate the expression. Write your answer in scientific notation and standard form.

25. $\left(1.2 \times 10^7\right)\left(4 \times 10^{-2}\right)$

26. $\dfrac{3.9 \times 10^8}{1.3 \times 10^3}$

Name_____ Date _____

6.1 Practice B

In Exercises 1–6, evaluate the expression.

1. 5^{-4}

2. $(-5)^{-4}$

3. $\dfrac{7^{-1}}{-8^{0}}$

4. $\dfrac{8^{-1}}{(-4)^{0}}$

5. $\dfrac{-2^{-4}}{3^{-3}}$

6. $\dfrac{6^{-2}}{(-1)^{-4}}$

In Exercises 7–21, simplify the expression. Write your answer using only positive exponents.

7. $\dfrac{7^{-2}m^{0}}{n^{-4}}$

8. $\dfrac{(-9)^{0}\,j^{-1}k^{-4}}{2^{0}}$

9. $\dfrac{5^{-2}w^{0}}{y^{-10}}$

10. $\dfrac{t^{-5}}{8^{-2}s^{-3}}$

11. $\dfrac{3^{-2}a^{-1}}{9^{-1}b^{-2}c^{0}}$

12. $\dfrac{17x^{0}y^{-8}}{4^{-2}z^{-6}}$

13. $\left(p^{6}\right)^{3}$

14. $\left(q^{-4}\right)^{5}$

15. $5^{3} \bullet 5^{-7}$

16. $-4 \bullet (-4)^{-2}$

17. $\dfrac{x^{7}}{x^{4}} \bullet x^{2}$

18. $\dfrac{v^{5} \bullet v^{3}}{v^{2}}$

19. $\left(-8t^{2}\right)^{3}$

20. $\left(-\dfrac{q^{4}}{5}\right)^{-3}$

21. $\left(\dfrac{1}{3h^{5}}\right)^{-4}$

In Exercises 22 and 23, simplify the expression. Write your answer using only positive exponents.

22. $\left(\dfrac{5x^{-4}y^{3}}{2x^{2}y^{0}}\right)^{2} \bullet \left(\dfrac{4xy}{y^{3}}\right)^{2}$

23. $\left(\dfrac{2a^{0}b^{-4}}{b^{3}}\right)^{4} \bullet \left(\dfrac{a^{3}b^{-2}}{3b^{4}a^{-4}}\right)^{3}$

In Exercises 24 and 25, evaluate the expression. Write your answer in scientific notation and standard form.

24. $\left(4.3 \times 10^{-4}\right)\left(6 \times 10^{7}\right)$

25. $\dfrac{1.2 \times 10^{-3}}{4.8 \times 10^{-10}}$

26. Find x and y when $b^{x}b^{y} = b^{8}$ and $b^{4x}b^{-2y} = b^{2}$. Explain how you found your answer.

Name_____ Date _____

6.2 Practice A

In Exercises 1 and 2, rewrite the expression in rational exponent form.

1. $\sqrt{7}$

2. $\sqrt[4]{13}$

In Exercises 3 and 4, rewrite the expression in radical form.

3. $14^{1/4}$

4. $117^{1/6}$

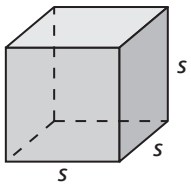
In Exercises 5 and 6, find the indicated real *n*th root(s) of *a*.

5. $n = 3, a = 27$

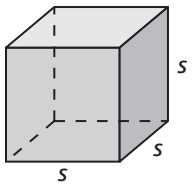
6. $n = 4, a = 16$

In Exercises 7 and 8, find the dimensions of the cube. Check your answer.

7. Volume $= 125$ ft^3



8. Volume $= 343$ m^3



In Exercises 9–11, evaluate the expression.

9. $\sqrt[3]{-125}$

10. $\sqrt[4]{81}$

11. $\sqrt[4]{-625}$

In Exercises 12 and 13, rewrite the expression in rational exponent form.

12. $\left(\sqrt[4]{14}\right)^3$

13. $\left(\sqrt[3]{-40}\right)^5$

In Exercises 14 and 15, rewrite the expression in radical form.

14. $10^{3/5}$

15. $(-3)^{6/5}$

In Exercises 16–18, evaluate the expression.

16. $81^{3/4}$

17. $25^{3/2}$

18. $(-27)^{2/3}$

19. The area of a square patio is 49^3 square inches. Find the length of one side of the patio.

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6.2 Practice B

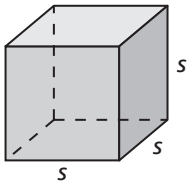
In Exercises 1 and 2, find the indicated *n*th root(s) of *a*.

1. $n = 6, a = 64$

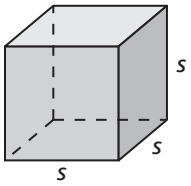
2. $n = 5, a = 243$

In Exercises 3 and 4, find the dimensions of the cube. Check your answer.

3. Volume $= 729 \text{ cm}^3$



4. Volume $= 1000 \text{ yd}^3$



In Exercises 5–7, evaluate the expression.

5. $-\sqrt[3]{-512}$

6. $729^{1/6}$

7. $(-625)^{1/4}$

In Exercises 8 and 9, rewrite the expression in rational exponent form.

8. $\left(\sqrt[5]{-53}\right)^4$

9. $\left(\sqrt[4]{110}\right)^7$

In Exercises 10 and 11, rewrite the expression in radical form.

10. $(-34)^{4/9}$

11. $41^{7/4}$

In Exercises 12–17, evaluate the expression.

12. $(-128)^{3/7}$

13. $(-25)^{5/2}$

14. $1000^{4/3}$

15. $\left(\frac{1}{125}\right)^{2/3}$

16. $(343)^{-1/3}$

17. $\left(\frac{1}{64}\right)^{3/2}$

18. The radius of a sphere is given by the equation $r = \left(\frac{3V}{4\pi}\right)^{1/3}$, where V is the volume of the sphere. Find the radius, to the nearest centimeter, of a sphere that has a volume of 268 cubic centimeters. Use 3.14 for π.

19. Use the formula $r = \left(\frac{F}{P}\right)^{1/n} - 1$ to find the annual inflation rate to the nearest tenth of a percent. A rare coin increases in value from \$0.25 to \$1.50 over a period of 30 years.