Name: _____ **Hour:** _____

Review 7-1 to 7-4

What is the simplified form of each expression?

1. $(-4.2)^0$

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

3. $(-3)^{-2}$

4. $8g^{-2}d^6$

5. $\dfrac{3}{a^{-9}b}$

6. What is the value of $\dfrac{y^{-5}}{x^{-3}}$ for $x = 2$ and $y = -4$?

7. What is the value of $\frac{x^{-3}}{y^{-1}}$ for $x = 2$ and $y = -4$?

What is each expression written using each base only once?

8. $(7.57)^{-4} \cdot (7.57)^{4}$

9. $(-5)^{-5} \cdot (-5)^{6}$

10. $7^{10} \cdot 7^{-4} \cdot 7^{7}$

What is the simplified form of each expression?

11. $2b^{-1} \cdot 5b^{10}$

12. $7x^{-8} \cdot 6x^{3}$

13. $x^{8} \cdot 2y^{10} \cdot 5x^{5}$

14. $-4x^3 \cdot 2y^{-2} \cdot 5y^5 \cdot x^{-8}$

Find the simplified form of the expression. Give your answer in <u>scientific notation</u>.

15. $\left(7 \times 10^2\right)\left(7 \times 10^5\right)$

16. $\left(3 \times 10^{-6}\right)\left(6 \times 10^{-8}\right)$

17. $\left(9 \times 10^5\right)\left(6 \times 10^{-7}\right)$

18. Astronomers measure large distances in light-years. One light-year is the distance that light can travel in one year, or approximately 5.88×10^{12} miles. Suppose a star is 1.92×10^3 light-years from Earth. In scientific notation, approximately how many miles is it?

What is the simplified form of the expression?

19. $(p^6)^2$

20. $(t^{\frac{5}{3}})^{\frac{1}{5}}$

21. $m^7\left(m^2\right)^{-9}$

What is the simplified form of each expression?

22. $\frac{t^{11}}{t^2}$

23. $\frac{y^{-2}}{y^5}$

24. $\frac{c^9 d^{-7}}{c^{14} d^{-10}}$

25. Radio signals travel at a rate of 3×10^8 meters per second. How many seconds will it take for a radio signal to travel from a satellite to the surface of the Earth if the satellite is orbiting at a height of 3.6×10^7 meters? **Give your answer in <u>scientific notation</u>.**

26. Scientists believe that there is an extremely massive black hole at the center of the Milky Way. How many times more massive than the Sun would a black hole with a mass of 7.36×10^{36} kg be? The mass of the Sun is approximately 1.99×10^{30} kg. **Give your answer in <u>scientific notation</u>.**