Name _____ Date _____

CHAPTER 10 TEST Review- Exponents and Scientific Notation

Section 10.1- Exponents

Evaluate the expression.

1. $(-7)^4$ **2.** $-\left(\frac{1}{6}\right)^5$ **3.** $2 + 7 \times (-3)^2$

4. Describe what is meant by the expression $(-3)^n$. _____

How is this different from the expression -3^n _____

Section 10.2 and 10.3 – Product and Quotient of Powers Property

Simplify the expression. Write your answer as a power.

5. $(-6)^5 \bullet (-6)^4$ **6.** $\left(y^{10}\right)^{20}$

Simplify the expression.

8. $(-4b)^4$ **9.** $\left(\frac{9}{10p^4}\right)^2$

10. $\left(-\frac{2}{9}\right)^2$ **11.** $\frac{x^{12}y^8}{3^3x^5y^9}$

Section 10.4- Zero and negative Exponents

Simplify. Write the expression using only positive exponents.

13. $19x^{-6}$ **14.** $\frac{16m^{-5}}{m^{-8}}$ **15.** $3t^6 \bullet 8t^{-6}$

16. $m^{-2} \bullet n^3$ **17.** $\frac{9c^3}{c^{-6}}$ **18.** $\frac{7x^3}{2x^{-9}}$

Section 10.5 and 10.6- Reading and Writing Scientific Notation

Tell whether the number is written in scientific notation. Explain.

19. 14×10^{8}

20. 4.79×10^{-8}

Write the number in standard form.

21. 2×10^{-5}

22. 3.7×10^{6}

23. 4.12×10^{-3}

24. 7.62×10^{10}

25. Light travels at 3×10^{8} meters per second.

a. Write the speed of light in standard form.

b. How far has light traveled after 5 seconds?

Write the number in scientific notation.

26. 9,600,000

27. 0.0027

28. 0.0000404

29. 75,010,000,000

30. A patient has 0.0000075 gram of iron in 1 liter of blood. The normal level is between 6×10^{-7} gram and 1.6×10^{-5} gram. Is the patient's iron level normal? Write the patient's amount of iron in scientific notation.

Section 10.7- Operations in Scientific Notation

Evaluate and write your answer in scientific notation.

31. $\left(6.7 \times 10^{5}\right) - \left(4.3 \times 10^{5}\right)$

32. $\left(8.9 \times 10^{-3}\right) - \left(1.9 \times 10^{-3}\right)$

33. $\left(2 \times 10^{4}\right) + \left(7.2 \times 10^{5}\right)$

34. $\left(3.2 \times 10^{-3}\right) + \left(9.4 \times 10^{-2}\right)$

35. $\left(6 \times 10^{8}\right) \times \left(4 \times 10^{6}\right)$

36. $\left(9 \times 10^{-3}\right) \times \left(9 \times 10^{-3}\right)$

37. $\left(8 \times 10^{3}\right) \div \left(2 \times 10^{2}\right)$

38. $\left(2.34 \times 10^{5}\right) \div \left(7.8 \times 10^{5}\right)$

39. How many times greater is the radius of a basketball than the radius of a marble?

Radius = 1.143×10^{1} cm

Radius = 5×10^{-1} cm

Other helpful review for the Chapter 10 test:

40. 25% of 220

41. 5% of 20,000

42. 80% of 3.2×10^3

43. 9% of 5×10^6