Name_____ 8R Unit 11 Review Scientific Notation

Write the following in Standard Form:

1) 6.3×10^7 6.3000000 → 63,000,000

2) 5.23×10^{-4} .0005.23 → .000523

3) 8.08×10^0 → 8.08

4) 4.2×10^{-1} .4.2 → .42

5) 9.24×10^{10} 9.2400000000 → 92,400,000,000

Write the following using Scientific Notation: LARS

6) 120 → 1.2×10^2

7) 65,002,000 → 6.5002×10^7

8) 0.0000233 → 2.33×10^{-5}

9) 345×10^4 → 3.45×10^3

10) 523×10^9 → 5.23×10^{11}

Find the value of the following. Write your answer in Scientific Notation.

11) $(4.3 \times 10^7)(2.2 \times 10^3)$ → 9.46×10^{10}

12) $(5 \times 10^{12})(4.77 \times 10^{-5})$ → 2.385×10^8

13) $(3.6 \times 10^{-5})^3$ → 4.67×10^{-14}

14) $\frac{6.2 \times 10^9}{2 \times 10^2}$ → 3.1×10^7

15) $(3.45 \times 10^6) \div (8.01 \times 10^{-5})$ → 4.31×10^{10}

16) $\frac{1.6332 \times 10^{11}}{1.6332 \times 10^{11}}$ → 1

17) $(4.3 \times 10^7) + (7.2 \times 10^7)$ → 1.15×10^8

18) $(5.32 \times 10^{12}) - (2.9 \times 10^3)$ → 5.32×10^{12}

19) $(2 \times 10^7) + (5.6 \times 10^6)$ → 2.56×10^7

Compare using < > =

20) 5.3×10^3 (>) 4.5×10^3

21) 2300 (=) 2.3×10^3 → 2.3×10^3

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Word Problems: Add, Subtract, Multiple, or Divide

22) How many times larger is 9.8×10^6 than 6.32×10^5?

$\frac{9.8 \times 10^6}{6.32 \times 10^5} = 1.55 \times 10^1 = 15.5$

About 16 times larger

23) Find the mass of 2.7×10^{15} hydrogen atoms if the mass of one hydrogen atom is 1.67×10^{-24} grams.

$(2.7 \times 10^{15})(1.67 \times 10^{-24})$

4.509×10^{-9}

24) The distance from the Earth to the star Alpha Centauri is about 4.07×10^{13} kilometers. If light travels at a speed of about 3.0×10^5 kilometers per second, how long does it take light to travel from the star to Earth?

$\frac{4.07 \times 10^{13}}{3.0 \times 10^5} = 1.36 \times 10^8$

25) In 1867, the United States purchased Alaska from Russia for $7.2 million. The total area of Alaska is about 3.78×10^8 acres. What was the price per acre?

$\frac{(3.78 \times 10^8)}{(7.2 \times 10^6)} = 5.25 \times 10^1 = 52.50$

= $52.50 per acre

26) Consider a person whose heart beats 70 times per minute, and lives to be 85 years old. How many times would their heart beat in their lifetime (excluding leap years)? Write your answer in scientific notation.

SKIP

27) If the population in New York City is 3.2×10^7 and the population on Long Island is 1.68×10^5, how many people live in these two areas combined? Express your answer in scientific notation.

$(3.2 \times 10^7) + (1.68 \times 10^5) = 3.2168 \times 10^7$

28) The masses of the following planets in a given solar system are listed below.

Planet A:	3.24×10^{24}	Planet B:	5.673×10^{25}
Planet C:	2.178×10^{25}	Planet D:	3.923×10^{24}

What is the average mass of all four planets? Write your answer in scientific notation.

$(3.24 \times 10^{24}) + (5.673 \times 10^{25}) + (2.178 \times 10^{25}) + (3.923 \times 10^{24})$

8.57×10^{25}

$\frac{8.57 \times 10^{25}}{4} = 2.14 \times 10^{25}$

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Mixed Review Simplify:

29) $8x - 2y + 6x - y$

$14x - 3y$

30) $-5(-2x + 7) - 5$

$10x - 35 - 5$

$\boxed{10x - 40}$

Simplify:

31) $5^5 \cdot 5^7$

5^{12}

32) $2^6 \cdot 2^{-9}$

$2^{-3} = \boxed{\frac{1}{2^3}}$

33) $\frac{9^8}{9^4}$

9^4

34) $6^{-10} \div 6^3$

$6^{-13} = \boxed{\frac{1}{6^{13}}}$

35) $\frac{6}{0}$

undefined

Solve.

36) $4(-3x + 2) = 44$

$-12x + 8 = 44$

$-8 \quad -8$

$\frac{-12x}{-12} = \frac{36}{-12}$ $\boxed{x = -3}$

37) $4(x - 2) = 3x + 5$

$4x - 8 = 3x + 5$

$-3x \quad -3x$

$x - 8 = 5$

$+8 \quad +8$

$\boxed{x = 13}$

38) $4x + 2 = 5x - 3 - x$

$4x + 2 = 4x - 3$

$\boxed{\text{no solution}}$

39) Convert 68 degrees Fahrenheit to Celsius. $C = \frac{5}{9}(F - 32)$

$C = \frac{5}{9}(68 - 32)$

$= \frac{5}{9}(36)$

$\boxed{C = 20°}$

40) Find the slope of the line which passes through points (6,3) and (4, -5)

$\frac{3 - (-5)}{6 - 4} = \frac{8}{2} = \boxed{4}$

41) Find the volume of a prism when $l = 10$, $w = 8$, and $h = 6$

$V = l \cdot w \cdot h$ $V = (10)(8)(6)$ $\boxed{V = 480 \text{ units}^3}$

42) Find the volume of a cylinder when $r = 5$ and $h = 8$ $(V = \pi r^2 h)$

$V = \pi(5)^2(8)$

$V = \pi(25)(8)$

$\boxed{V = 200\pi \text{ units}^3}$

$\boxed{V = 628.3 \text{ units}^3}$

43) Write the equation of a line whose slope = 2 and y-intercept = -6

$y = 2x - 6$

44) Reflect point A (2,5) over the x axis. *change y

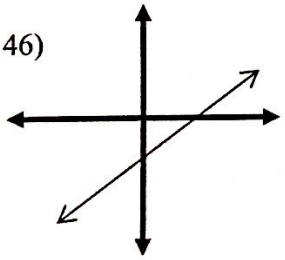
(2,-5)

45) Reflect point B (-5,6) over the y axis. * change x

(5,6)

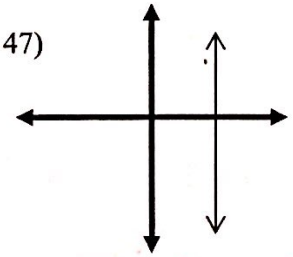
Name the type of slope.

46)



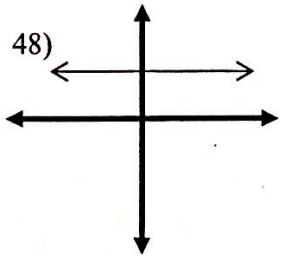
positive

47)



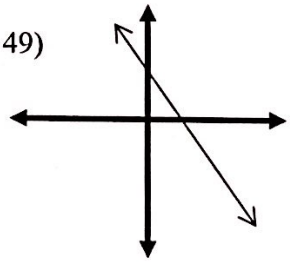
undefined

48)



zero

49)



negative

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