Exponents and Equations Worksheet #1 B   Name: _____

Section 1: Write the following number sentences using exponents.

1. 8 X 8 X 8 X 8 X 8 _____

2. 6 X 6 X 6 X 6 X 6 _____

3. 4 X 4 X 4 X 4 X 4 X 4 X 4 X 4 _____

Write the following numbers, which are expressed in exponential notation, **in expanded form and find their value.**

4. $(-3)^4$ _____

5. -7^2 _____

6. 8^3 _____

Section 2: Scientific Notation

Write the following numbers in standard form.

7. $7.3 \times 10^4 =$ _____

8. $9.23 \times 10^8 =$ _____

9. $6.75 \times 10^{-7} =$ _____

10. $4.5 \times 10^{-3} =$ _____

Add or Subtract. Put your answer in scientific notation.

$(2 \times 10^5) - (1.9 \times 10^4)$ _____

$(3.1 \times 10^{-3}) + (2.4 \times 10^{-2})$ _____

Put the following numbers in scientific notation.

11. 7,100,000 _____

12. 1,654,000,000 _____

13. 0.00098 _____

14. 0.0000075 _____

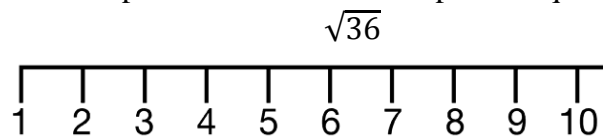Put in correct scientific notation. Correct the exponents.

15. $278 \times 10^4 =$ _____

16. $.0926 \times 10^{-5} =$ _____

17. $300 \times 10^{10} =$ _____

18. $0.6 \times 10^{-4} =$ _____

Multiply or Divide. Put your answer in scientific notation.

19. $\dfrac{1.1 \times 10^{-3}}{5.5 \times 10^{-8}}$ _____

20. $(3.2 \times 10^5)(8.09 \times 10^7)$ _____

21. Put the numbers in order from least to greatest.
$7.1 \times 10^6,\ 7.8 \times 10^{-3},\ 7.9 \times 10^4$
$7.3 \times 10^{-9},\ 7.4 \times 10^4$

_____

_____

Section 3: Irrational numbers.

22. Complete the number line of perfect squares
$\sqrt{36}$

Find the approximate square root of each number to the nearest tenth.

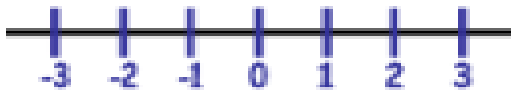23. $\sqrt{2}$ _____

24. $\sqrt{22}$ _____

25. $\sqrt{76}$_____

26. Circle the irrational numbers

$1.2\overline{45}$, π, 3.14, 7, 1.92, $\sqrt{93}$, $\sqrt{100}$
$\frac{5}{6}$, $\frac{8}{3}$, 0, 1.2367..., -8, $-\frac{2}{3}$

27. Place the numbers on the number line:
$\sqrt{4}$, .5, $-\frac{2}{3}$, $\sqrt{2}$, $-\frac{8}{4}$, $-\sqrt{9}$, 2.3

Section 4 Expressions and Equations

Simplify

28. $(-2)(4) + (-3)^2$ _____

29. $7 \cdot 2 + 5^2 - 16 + (2\text{-}1)$ _____

30. $5 - (6 - 4)^3 + (-2)^0$ _____

Solve

31. -7n – 3 = 25   _____

32. $\frac{x}{20} - 4 = 12$ _____

33. $12 + \frac{3}{4}a = 42$ _____

34. 3b -3(-23+2b) = 48   _____

35. 5k + 3 = 2k + 1   _____

Section 5:   Word Problems

36. The area of the square rug in Milo's classroom is $81ft^2$. What is the length of each side of the rug?
_____

37. Marsha stores her school supplies in a cube shaped box with a volume of $125in^3$. She sees that each face of the box is a square. What is the length of each edge of the top of the box?

_____

38. Venus has an approximate distance from the sun of 7.23 X 10^5 miles. What is this expressed in standard form? _____

39. The temperature of the core of the sun is 27,000,000°F. What is this number expressed in scientific notation?

_____

Section 6: Exponent Rules

Simply. Write each answer as a single positive exponent.

40. 7^{-2} _____

41. $2a^5 \; x \; 3a^{-1}$ _____

42. $(x^5)^4$ _____

43. $\frac{4x^7}{2x^3}$ _____

44. 99^0 _____

45. $3^6 x \; 3^4$ _____

46. $11^{12} \div 11^{-3}$ _____

47. b^{-5} _____

48. $5^6 x \; 3^4$ _____