



Name ANSWERS Date _____ Block _____
 Study Guide on Exponent Rules and Scientific Notation

Simplify each expression:

1. $(-6)^0$
1

2. 8^{-2}
 $\frac{1}{8^2}$

3. $(w^6)^3$
 w^{18}

4. $9^9 \cdot 9^5$
 9^{14}

5. $\frac{a^{-10}}{a^5} = a^{-5} = \frac{1}{a^5}$

Write each number in scientific notation:

6. 4,500,000,000
 4.5×10^9

7. 0.00567

8. 2.00

5.67×10^{-3}

2.00×10^0

9. 0.09708

9.708×10^{-2}

10. 0.0007

7.0×10^{-4}

Write each number in standard notation:

11. 2.23×10^3
2230

12. 3.00×10^0
3.00

13. 7.896×10^{-7}
0.000007896

14. 9.3×10^2
970

15.176×10^3
0.00176

Evaluate and write your answers in scientific notation:

multiply
 16. a. $(8 \times 10^7)(7 \times 10^4)$
 56×10^{11}
 5.6×10^{12}

divide
 17. a. $3.85 \times 10^{18} \div 4.01 \times 10^{17}$
 9.6×10^1
 9.6×10^0

add
 18. a. $(8.9 \times 10^9) + (4.2 \times 10^6)$
 $8.9 \times 10^9 + 0.042 \times 10^9$
 8.9042×10^9

UARS

multiply
 $3 \times 10^{-3} \times (5 \times 10^{-4})$

15×10^{-7}
 1.5×10^{-6}

divide
 b. $\frac{9.45 \times 10^{10}}{1.5 \times 10^6}$

6.3×10^4

sub.
 b. $(1.35 \times 10^6) - (117,000)$
 $(1.35 \times 10^6) - (1.17 \times 10^5)$
 $(1.35 \times 10^6) - (0.117 \times 10^6)$
 1.233×10^6

True or false: These are written in scientific notation: Circle the letter T=true F=false

19. 5.00
T or F

20. 1.56×10^3
T or F

21. 5.00×10^9

22. 15.6×10^2

T or F T or F

Word problems: Decide whether to use multiplication, division, addition or subtraction to solve:

23. The world population was about 8.66×10^5 . The population of the United States was about 2×10^4 . About how many times larger is the world population than the population of the United States? SHOW ALL WORK.

division

$$\frac{8.66 \times 10^5}{2 \times 10^4} = 4.33 \times 10^1$$