Name _____ Hour _____

Group work - Exponent Rules & Scientific Notation

Use the exponent rules to answer the questions in exponential form.

1. $5^3 \cdot 5^7 =$
2. $3^3 \cdot 5^3 =$
3. $x^5 \cdot x \cdot x^0 =$
4. $(3^4)^3 =$
5. $(x^5)^2 =$
6. $(2^3)^2 \cdot 2^3 \cdot 2 =$
7. $\frac{4^8}{4^2} =$
8. $\frac{x^{15}}{x^3} =$
9. $\frac{(x^2)^7}{(x^3)^2} =$
10. $\frac{4^3 \cdot 4^{10}}{(4^3)^3} =$
11. $\frac{10^6}{(10^3)^2} =$
12. $\frac{3^7}{3^{10}} =$

Simplify the expressions. Answer using only positive exponents.

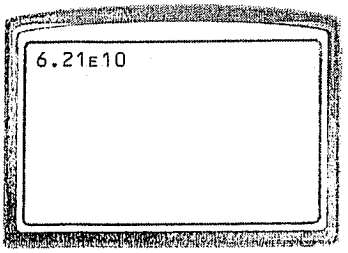
13. $2^{-5} =$
14. $y^{-4} =$
15. $7x^{-6} =$
16. $12^{-1} =$
17. $(-5)^3 =$
18. $5^{-3} =$
19. $(-5)^{-3} =$
20. -5^{-2}
21. $\frac{12x^7}{4x^5} =$

Find the value of each power of 10.

22. $10^6 =$
23. $10^{-4} =$
24. $10^0 =$
25. $10^{11} =$
26. $10^{-6} =$
27. $10^{-1} =$

Write the number shown on the calculator display in standard form.

28.



Tell whether the number is written in scientific notation. If it is not, explain why it isn't.

29. 4.375×10^{-8}

30. 62.9×10^{14}

31. 9.897×10^{-15}

32. 0.451×10^{-12}

33. 25×10^{18}

34. 5.1786×10^{-25}

Write the number in standard form.

35. 8×10^{6}

36. 9×10^{-2}

37. 2×10^{3}

38. 5.3×10^{-4}

39. 1.2×10^{8}

40. 7.86×10^{5}

Write the number in scientific notation.

1. 350,000

2. 0.0004

3. 0.000000000000527

4. 12,500,000

5. 1,900,000,000

6. 0.0000001

7. 5,000,000,000,000

8. 0.00006524

Order the numbers from least to greatest.

9. 3.6×10^{8}, 6.3×10^{8}, 3.26×10^{8}

10. 9.8×10^{-12}, 1.23×10^{-11}, 5.05×10^{-13}

16. A pipette is a laboratory instrument that is used to transport a measured volume of liquid. A pipette that dispenses between 1 and 1000 microliters is called a micropipette. A microliter is equivalent to 0.000001 liter. Write 0.000001 in scientific notation.