NAME ANSWER KEY DATE _____ PERIOD _____

EXPONENTS - EXAM REVIEW #6

Simplify using properties of exponents. ***Show all work.***

1. $x^2 \cdot x^7$

$= x^{2+7} = \boxed{x^9}$

2. $(5a^7)(4a^2)$

$= 5 \cdot 4 \cdot a^{7+2} = \boxed{20a^9}$

3. $(p^3)^{12}$

$= p^{3 \cdot 12} = \boxed{p^{36}}$

4. $(3pr^2)^2$

$= 3^2 p^2 r^{2 \cdot 2} = \boxed{9p^2r^4}$

5. $\frac{x^4}{x^2}$

$= x^{4-2} = \boxed{x^2}$

6. $\frac{9d^7}{3d^6}$

$= 3 \cdot d^{7-6} = \boxed{3d}$

7. $\frac{m^7p^2}{m^3p^2}$

$= m^{7-3} \cdot \cancel{p^{2-2}}$

$= \boxed{m^4}$

8. 8^{-2}

$= \frac{1}{8^2} = \boxed{\frac{1}{64}}$

9. $\frac{h^3}{h^{-6}}$

$= h^3 \cdot h^6 = h^{3+6} = \boxed{h^9}$

10. $\frac{48x^6y^7z^5}{-6xy^5z^6}$

$= -8 \cdot x^{6-1} \cdot y^{7-5} \cdot z^{5-6}$

$= -8x^5y^2z^{-1} = \boxed{\frac{8x^5y^2}{z}}$

11. $(3a^4cb^2)^0 = \boxed{1}$

Express each number in ***scientific notation.***

12. 980,200,000,000,000

9.8×10^{14}

13. 0.00142

1.42×10^{-3}

Express each number in ***standard form.***

14. 1.86×10^{-4}

.000186

15. 4.9×10^5

490,000

*Simplify each expression. Give your final answer in **scientific notation. Show all work!***

16. $\frac{(4.625 \times 10^{10})}{(1.25 \times 10^{4})} = (4.625 \div 1.25) \times 10^{10-4}$

$= 3.7 \times 10^{10-4}$

$= \boxed{3.7 \times 10^{6}}$

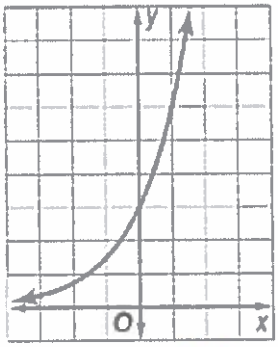
17. $(1.35 \times 10^{8})(7.2 \times 10^{-4})$

$= (1.35 \cdot 7.2) \times 10^{8+-4}$

$= \boxed{9.72 \times 10^{4}}$

*Determine if the given equation demonstrates **exponential growth, exponential decay, or neither.***

18.



growth

19. $y = x^{11}$

neither

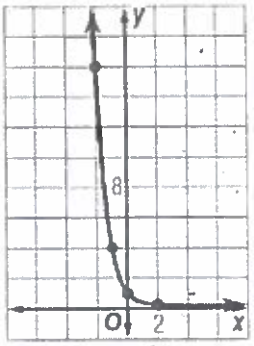
20. $y = \left(\frac{1}{3}\right)^{x}$

decay

21. $y = 15^{x}$

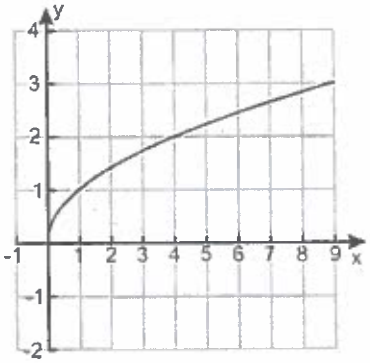
growth

22.



decay

23.



neither

*Determine if the given table expresses **exponential behavior. Show how you know!***

24.

x	0	1	2	3
y	3	9	27	81

$\frac{9}{3} = 3$ $\frac{27}{9} = 3$ $\frac{81}{27} = 3$

yes, common factor of 3

25.

x	0	1	2	3
y	5	10	15	20

$\frac{10}{5} = 2$ $\frac{15}{10} = 1.5$ $\frac{20}{15} = \frac{4}{3}$

NO