

Unit 8 Practice Test #2

You will be required to complete a short thatquiz as part of you test grade. It will consist of 10 questions. You will record your grade on the test. There will be both a technology portion and non-technology portion of this test.

Simplify the following as far as they can go.

1. $3^2 \cdot 3^3 = 3^{2+3} = 3^5 = 243$

2. $p^m \cdot p^n = p^{m+n}$

3. $(x^3)(x^{x+2}) = x^{3+x+2} = x^{x+5}$

4. $(3x^3)(2xy^4) = 3 \cdot 2 \cdot x^3 \cdot x \cdot y^4 = 6x^4y^4$

5. $(-3x^mz)(-2y^3z^n)(x^m y^2) = -3 \cdot -2 \cdot x^m \cdot x^m \cdot y^3 \cdot y^2 \cdot z \cdot z^n = 6x^{2m}y^5z^{1+n}$

The area, A , of a triangle is given by $A = \frac{1}{2}bh$, where b is the base and h is the height. Find the area of the triangle given the values of b and h .

6. $b = 6x, h = 3x \quad A = \frac{1}{2}(6x)(3x) = \frac{1}{2}(18x^2) = 9x^2$

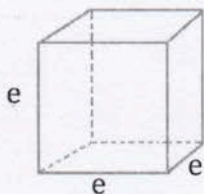
7. $h = 10v^3, b = 8v^2 \quad A = \frac{1}{2}(10v^3)(8v^2) = \frac{1}{2}(80v^5) = 40v^5$

Simplify the following as far as they can go.

8. $(4c^2)^3 = 4^3 c^{2 \cdot 3} = 64c^6$

9. $(5h^4)^2(-3g^2h) = 5^2 h^{4 \cdot 2}(-3g^2h) = 25h^8 \cdot -3g^2h = -75g^2h^9$

Find the volume of the cube for each edge length, e.



10. $e = 4x^3$

$$V = (4x^3)^3 = 64x^9$$

* note 4^3 , not 4×3

$$11. e = 2x^2y^4 \quad V = (2x^2y^4)^3 = 8x^6y^{12}$$

Simplify as far as possible.

$$12. \frac{x^{18}}{x^{12}} = x^{18-12} = x^6$$

$$13. \frac{(2x^2)^3(2x^5)}{4x^3} = \frac{(8x^6)(2x^5)}{4x^3} = \frac{16x^{11}}{4x^3} = 4x^8$$

$$14. \frac{4 \cdot (2x^5)^0}{(350y^2)^0} = \frac{4 \cdot 1}{1} = 4$$

Remember: anything to zero power = 1.

$$15. \frac{10p^2q^4r^{-1}}{5p^4qr^{-3}} = \frac{10}{5} \cdot \frac{p^2}{p^4} \cdot \frac{q^4}{q} \cdot \frac{r^{-1}}{r^{-3}} = 2p^{-2}q^3r^4 = \frac{2q^3r^4}{p^2}$$

no negative exponents allowed

Plot the following points on Geogebra and find the exponential equation which best fits the points. Use "fitgrowth<list of points>" to help. Use that exponential equation to answer the questions.

	A	B	C	D	E	F	G
X	-3	-2	-1	0	1	2	3
Y	.008	.04	.2	1	5	25	125

fitgrowth[A,B,C,D,E,F,G]

16. The exponential equation which fits these points is $f(x) = 1.5^x$

NAME _____

DATE _____

Answer the following questions using this equation.

17. What would the value of "y" be if $x=5$? $y=5^5$
3125

18. What value of x would give you a y -value of 1,953,125? $1,953,125 = 5^9$
 $x=9$

Tell whether the function represents exponential growth or decay.

19. $y = (.2)^x$ decay

20. $y = 4 \cdot \left(\frac{2}{3}\right)^x$ decay

21. $y = .5 \cdot (8)^x$ growth

$y = b^x$
 - If b is fraction or decimal less than 1, then it is decay.

- If $b > 1$, growth.

Evaluate the following. Express each result in scientific notation.

22. $\frac{6 \times 10^4}{3 \times 10^2}$ $\frac{6}{3} \times \frac{10^4}{10^2} = 2 \times 10^2$ ← subtract exponents

23. $\frac{1.5 \times 10^7}{3 \times 10^5}$ $\frac{1.5}{3} \times \frac{10^7}{10^5} = .5 \times 10^2 = (5 \times 10^{-1}) \times 10^2 = 5 \times 10^1$

24. $(4 \times 10^4)(5 \times 10^{-2})$ $(4 \times 5 \times 10^4 \times 10^{-2}) = 20 \times 10^2$
 $(2.0 \times 10^1 \times 10^2) = 2.0 \times 10^3$

25. The speed of light is 3×10^8 meters/second. If the sun is 7.5×10^{11} meters from earth, how many seconds does it take light to reach the earth. Express your answer in scientific notation.

$\frac{7.5 \times 10^{11} \text{ m}}{3 \times 10^8 \text{ m/s}} = 2.5 \times 10^3 \text{ seconds}$