Review for Test #1 - Exponents

Name: _____ Class: _____

1.) Which shows 5^4 in standard form?

(A) 20 (B) 625 (C) 1,024 (D) 3,125

$5 \cdot 5 \cdot 5 \cdot 5 = 625$

2.) Which is $6^3 \times 6^4$ in exponential form?

(A) 36^{12} (B) 7^6 (C) 6^{12} (D) 6^7

$3+4=7$

3.) Which shows 9^{-3} in standard form?

(A) 729 (B) 27 (C) $\frac{1}{27}$ (D) $\frac{1}{729}$

$9^{-3} = \frac{1}{9^3} = \frac{1}{729}$

4.) Which shows $(11^6)^2$ in exponential form?

(A) 22^6 (B) 11^{12} (C) 11^8 (D) 11^4

$6 \cdot 2 = 12$

5.) Which shows $4^5 \div 4^6$ in standard form?

$5-6=-1$

(A) -4 (B) ¼ (C) 1 (D) 4

$4^{-1} = \frac{1}{4}$

6.) Which shows $2^{-2} \times 2^6$ in exponential form?

(A) 2^4 (B) 2^{-4} (C) 2^{-8} (D) 2^{-12}

$-2+6=4$

7.) Which shows $(2^2)^{-2}$ in standard form?

$2(-2) = -4$

(A) 0 (B) $\frac{1}{16}$ (C) $\frac{1}{8}$ (D) 1

$2^{-4} = \frac{1}{2^4} = \frac{1}{16}$

8.) Which shows $6^{-1} \div 6^{-4}$ in exponential form?

(A) $\frac{1}{6^5}$ (B) $\frac{1}{6^3}$ (C) 6^1 (D) 6^3

$-1-4=3$

9.) What is one third of 3^{12}?

(A) 3^4 (B) 3^{11} (C) 1^4 (D) 1^{11}

$\frac{3^{12}}{3} = 3^{11}$ $(12-1=11)$

10.) What is one half of 2^{10}?

(A) 1^5 (B) 1^9 (C) 2^5 (D) 2^9

$\frac{2^{10}}{2}$ $10-1=9$

11.) What is the value of 5^0? 1

12.) Rewrite this expression with only one exponent: $2^3 \times 2^4 \times 2^5 \times 2^6 =$ 2^{18}

13.) Fill in the boxes (blanks) in the equations below:

a.) $\left(x^2\right)^{3} = x^6$

b.) $\left(x^{-4}\right)^3 = x^{-12}$

c.) $x^{0} = 1$

d.) $4^8 \div 4^{6} = 4^2$

e.) $7^2 \cdot 7^{3} = 7^5$

f.) $9^1 \times 9^1 \times 9^3 = 9^{5}$

g.) $5^{-3} = \frac{1}{5^{3}}$

14.) Rewrite the following expressions using a positive exponent.

a.) $3^{-7} = \frac{1}{3^7}$

b.) $9^4 \cdot 9^{-10} = 9^{-6} = \frac{1}{9^6}$

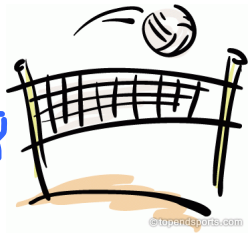
c.) $\frac{4^5}{4^8} = 4^{-3} = \frac{1}{4^3}$

d.) $(8^8)^{-3} = 8^{-24} = \frac{1}{8^{24}}$

15.) Express $4^2 \cdot 4^{-5}$ in standard form.

$4^{-3} = \frac{1}{4^3} = \frac{1}{4 \cdot 4 \cdot 4} = \boxed{\frac{1}{64}}$

16.) Simplify the expressions below.



a.) $(3x^5)^3$ $= 27x^{15}$

$3^3 \cdot x^{15}$

b.) $\frac{18x^8y^9}{-3x^7y^4}$ $-6xy^5$

c.) $\frac{x^9}{x^{-8}}$ $= x^{17}$

$9 - -8 = 17$

d.) $(2x^8)^6$ $= 2^6 \cdot x^{48}$

$= 64x^8$

e.) $\frac{-40a^{10}b^6}{-10ab^5}$ $4a^9b$

f.) $\frac{35c^{-4}}{7c^{-11}}$ $= 5c^7$

$-4 - -11 = 7$

17.) Find the area of the rectangle below. Express the answer in exponential notation with a base of 7.

length = 7^8

width = 7^3

$(7^8)(7^3) = 7^{11}$

18.) Evaluate each of the expressions below. Show your work.

$-9^2 =$ -81

$-9 \cdot 9$

$(-9)^2 =$ 81

$-9 \cdot -9$

$9^{-2} =$ $1/81$

$\frac{1}{9^2} = \frac{1}{81}$

19.) Which of the two products below will result in a positive answer? Explain your reasoning.

$(-5)^{11}$ or $(-5)^{14}$ (Circle one)

The exponent is even, so each -5 will have another -5 to pair up with to become positive.

20.) Your best friend tells you a secret and asks you not to tell anyone. However, the next day you tell 2 other friends the secret. The day after that, each of them tells 2 other friends the secret. If this pattern continues, how many people will know the secret in 1 week's time? Create a chart to show your work.

Day	1	2	3	4	5	6	7
# of people	2	4	8	16	32	64	128

128 people

What is this value in exponential notation? 2^7

21.) Jake saw Insidious: Chapter 2 this past weekend. On Monday, Jake told 4 friends about the movie. The day after that, each of those friends told 4 more friends about the movie. If this pattern continued, how many people would have been told about the movie by Friday? Create a chart to show your work.

Day	M	T	W	R	F
# of ppl	4	16	64	256	1824

What is this value in exponential notation? 4^5

22.) Earth has a diameter of about 10^4 kilometers. The diameter of the Sun is approximately 10^6 kilometers. How many times as great as the Sun's diameter is Earth's diameter? Express your answer with exponential notation with a base of 10.

$$\frac{10^6}{10^4} = \boxed{10^2}$$

23.) How many times bigger is 3^8 than 3^2? Express your answer in exponential notation with a base of 3.

$$\frac{3^8}{3^2} = \boxed{3^6}$$