

Algebra I  
 10.1 Worksheet #1  
 Defining Exponents

Name : \_\_\_\_\_

Date: \_\_\_\_\_ Hour: \_\_\_\_\_

Part A. Completion.

1. An exponent represents repeated \_\_\_\_\_ of a base number.
2. For an exponential expression  $x^n$ ,  $x$  is the \_\_\_\_\_ and  $n$  is the \_\_\_\_\_.
3.  $x^2$  is read “ \_\_\_\_\_ ” or “ \_\_\_\_\_ ”
4.  $x^3$  is read “ \_\_\_\_\_ ” or “ \_\_\_\_\_ ”
5.  $x^n$  is read “ \_\_\_\_\_ ”
6. When multiplying expressions with the same base you can \_\_\_\_\_ the exponents.
7. What happens in your calculator when you evaluate  $2^{300}$ ? \_\_\_\_\_
8. What happens in your calculator when you evaluate  $2^{400}$ ? \_\_\_\_\_
9. What is the largest exponent of 2 that can be evaluated on your calculator in scientific notation? \_\_\_\_\_
10. What is the largest exponent of 2 that can be evaluated on your calculator without getting an error? \_\_\_\_\_
11. A variable or constant written without an exponent has an understood exponent of \_\_\_\_.

Part B. Computation.

Use your calculator’s multiplication key to evaluate the following:

Re-write each with a base and an exponent

Identify and record the key sequence for exponents

1.  $8 \cdot 8 \cdot 8 =$  \_\_\_\_\_

8

\_\_\_\_\_

2.  $7 \cdot 7 \cdot 7 \cdot 7 =$  \_\_\_\_\_

7

\_\_\_\_\_

3.  $10 \cdot 10 \cdot 10 \cdot 10 =$  \_\_\_\_\_

10

\_\_\_\_\_

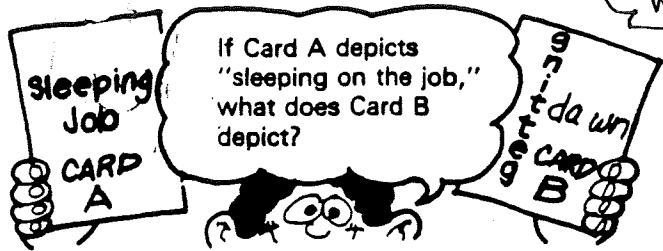
4.  $(5 \cdot 5) \cdot (5 \cdot 5 \cdot 5 \cdot 5 \cdot 5) = 5^{\square} \cdot 5^{\square} = 5^{\square} =$  \_\_\_\_\_

5.  $(9 \cdot 9 \cdot 9) \cdot (9 \cdot 9 \cdot 9 \cdot 9) = 9^{\square} \cdot 9^{\square} = 9^{\square} =$  \_\_\_\_\_

6.  $(4 \cdot 4 \cdot 4 \cdot 4 \cdot 4) \cdot (4 \cdot 4 \cdot 4 \cdot 4) = 4^{\square} \cdot 4^{\square} = 4^{\square} =$  \_\_\_\_\_

7.  $(8) \cdot (8 \cdot 8) = 8^{\square} \cdot 8^{\square} = 8^{\square} =$  \_\_\_\_\_

Write an answer in each box.



To check your answer:

- Simplify using exponents for the variables.
- Then cross out each box containing an answer in the Decoder.
- The remaining letters spell out the answer.

1. $t \cdot t \cdot t \cdot t \cdot t$ $t^5$	2. $w \cdot w \cdot w \cdot w \cdot w \cdot w$	3. $g \cdot g \cdot g \cdot h \cdot h$
4. $e \cdot e \cdot e \cdot e \cdot f \cdot f \cdot f$	5. $a \cdot a \cdot a \cdot a$	6. $m \cdot m \cdot m \cdot n \cdot n$
7. $r \cdot r \cdot s \cdot s \cdot s \cdot s$	8. $x \cdot x \cdot x \cdot x \cdot y \cdot y$	9. $b \cdot b \cdot 3 \cdot b \cdot b$
10. $x \cdot 2 \cdot x \cdot x \cdot 3 \cdot x$	11. $6 \cdot m \cdot 3 \cdot m \cdot m$	12. $a \cdot c \cdot c \cdot c \cdot d \cdot d$
13. $5 \cdot m \cdot m \cdot 2 \cdot m \cdot 3$	14. $6 \cdot a \cdot b \cdot 5 \cdot a \cdot a \cdot b$	15. $r \cdot r \cdot 8 \cdot r \cdot 2 \cdot s \cdot s$
16. $6 \cdot x \cdot x \cdot 3 \cdot y \cdot x$	17. $9 \cdot x \cdot y \cdot 2 \cdot x \cdot y \cdot 3$	18. $a \cdot a \cdot 2 \cdot b \cdot 5 \cdot b \cdot a$
19. $z \cdot y \cdot y \cdot 5 \cdot z \cdot 2 \cdot y$	20. $7 \cdot x \cdot 2 \cdot y \cdot x \cdot y$	21. $2 \cdot x \cdot x \cdot 5 \cdot y \cdot 7 \cdot x$
22. $9 \cdot a \cdot b \cdot b \cdot 2 \cdot b \cdot a$	23. $m \cdot 5 \cdot m \cdot 2 \cdot m \cdot 7$	24. $9 \cdot x \cdot y \cdot x \cdot y \cdot 2$
25. $5 \cdot m \cdot n \cdot n \cdot 2 \cdot m$	26. $a \cdot b \cdot 3 \cdot b \cdot 2 \cdot a$	27. $x \cdot x \cdot 3 \cdot y \cdot x \cdot 4$

### DECODER

$g^3h^2$ <b>B</b>	$m^3n^2$ <b>I</b>	$g^2h^3$ <b>G</b>	$a^4$ <b>N</b>	$m^2n^3$ <b>E</b>	$6x^4$ <b>P</b>	<del><math>5</math> <b>U</b></del>	$a^5$ <b>T</b>	$r^4$ <b>T</b>	$54xy^3$ <b>I</b>	$54x^2y^2$ <b>R</b>	$16r^2s^2$ <b>N</b>	$16r^3s^2$ <b>U</b>	$a^2c^2d^2$ <b>G</b>
$ac^3d^2$ <b>G</b>	$ac^2d^3$ <b>U</b>	$18x^3y$ <b>T</b>	$70m^3$ <b>I</b>	$70m^2$ <b>P</b>	$18a^2b^3$ <b>U</b>	$18ab^4$ <b>B</b>	$12x^3y$ <b>U</b>	$12x^2y^2$ <b>E</b>	$12xy^3$ <b>F</b>	$8a^6$ <b>O</b>	$16rs$ <b>R</b>	$18x^2y^2$ <b>R</b>	$3b^4$ <b>L</b>
$w^5$ <b>E</b>	$w^7$ <b>T</b>	$w^6$ <b>O</b>	$e^4f^3$ <b>W</b>	$e^3f^4$ <b>H</b>	$e^3f^3$ <b>E</b>	$r^2s^4$ <b>N</b>	$r^4s^2$ <b>C</b>	$18m^3$ <b>A</b>	$r^3s^3$ <b>R</b>	$rs^2$ <b>A</b>	$10a^3b^2$ <b>N</b>	$10m^2n^2$ <b>G</b>	$10mn^3$ <b>C</b>
$30m^3$ <b>O</b>	$30m^2$ <b>K</b>	$70x^3y$ <b>N</b>	$x^4y^2$ <b>I</b>	$70x^2y$ <b>O</b>	$14x^2y^2$ <b>F</b>	$14xy$ <b>F</b>	$14x^2y$ <b>D</b>	$10y^3z^2$ <b>E</b>	$10y^2z$ <b>A</b>	$6a^2b^2$ <b>N</b>	$30a^3b^2$ <b>D</b>	$6a^3b$ <b>W</b>	$30a^2b^2$ <b>N</b>

Answer: \_\_\_\_\_