Name_____ Date_____ Period_____

LESSON 6-3 · SESSION 1 · PRACTICE · FORM A

Writing Repeated Factors as Powers

Learning target – I can write repeated multiplication as a power and name its base and exponent. · 6.EE.A.1

REMEMBER

- A **power** shows a repeated factor: $5 \times 5 \times 5 = 5^3$.
- The **base** is the repeated factor. The **exponent** tells how many times it is a factor.
- Read 5^3 as "5 to the third power" or "5 cubed." 5^2 is "5 squared."

WORKED EXAMPLE

Write $9 \times 9 \times 9 \times 9$ as a power.

Step 1 The repeated factor is 9, so the base is 9.

Step 2 Count the 9s: there are four, so the exponent is 4.

Step 3 Check: the exponent counts factors, not × signs (there are only 3 × signs).

Answer **9^4; base 9, exponent 4**

WORDS **power** *(potencia)* · **base** *(base)* · **exponent** *(exponente)*

PRACTICE

show your work · label units

1. Write each product as a power.

a. $7 \times 7 \times 7 \times 7 =$ _____

b. $4 \times 4 \times 4 \times 4 \times 4 =$ _____

c. $5 \times 5 \times 5 =$ _____

d. $8 \times 8 =$ _____

e. $3/4 \times 3/4 =$ _____

f. $0.4 \times 0.4 \times 0.4 =$ _____

2. **Club and Patio.** After six weeks, a club's size has been multiplied by $2 \times 2 \times 2 \times 2 \times 2 \times 2$. A square patio has 10×10 tiles.

a. Write the club product as a power. _____

b. Write the patio product as a power. _____

c. In the club power, name the base and the exponent. _____

d. What does the exponent count? _____

3. Game Rounds. A score is multiplied by 5 in each of four rounds: $5 \times 5 \times 5 \times 5$. Write this as a power. Name the base and exponent.

Hint *The repeated factor is the base.*

Show your work.

Power_____

4. Ant Colony. A science report records an ant count as $13 \times 13 \times 13$. Write this as a power. Name the base and exponent.

Hint *Count the factors of 13.*

Show your work.

Power_____

5. Block Tower. Rafi wrote the product $8 \times 8 \times 8$ as the power 8^8. Justify or correct his work.

Hint *What does the exponent count? Recount the factors.*

Power_____

6. Two Directions. Write each one the other way.

Hint *Put parentheses around a fraction base.*

a. Write $1/2 \times 1/2 \times 1/2$ as a power. _____

b. Write 11^3 as a product of factors. _____

Show your work.

7. Folding Paper. Each time a sheet of paper is folded, the number of layers doubles. After 1 fold there are 2 layers.

a. Write the number of layers after 5 folds as a power of 2. _____

b. Find the number of layers after 5 folds. _____ layers

c. Explain how each new fold changes the power. _____

8. Swapped Numbers. Compare 4^3 and 3^4.

a. Write each power in expanded form. _____

b. Which power has more factors? _____

FIND THE ERROR

explain the mistake, then fix it

9. Kayla's Work. Kayla read the power 12^4 and wrote: "$12 \times 4 = 48$, so 12^4 equals 48." Explain her mistake. Then write 12^4 correctly as a product.

TEST PRACTICE

choose the best answer

10. $3 \times 3 \times 3 \times 3 \times 3$ written as a power is –

A 5^3 **B** 3^5 **C** 3×5 **D** 15

11. In 6^4, the base is –

A 6 **B** 4 **C** 24 **D** 10

SELF-CHECK CODE

find your answer · copy its letter into that problem's box · spell a math word

10 Z	2^6 E	3^4 T	2^5 E	8^3 O	32 N	13^3 P	5^4 X	8^8 Q	$(1/2)^3$ N

#2a	#3	#4	#5	#6a	#7a	#7b	#8b

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #___