Name_____ Date_____ Period_____

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

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. $6 \times 6 \times 6 =$ _____

b. $9 \times 9 \times 9 \times 9 =$ _____

c. $11 \times 11 =$ _____

d. $5 \times 5 \times 5 \times 5 \times 5 =$ _____

e. $2/3 \times 2/3 \times 2/3 =$ _____

f. $0.7 \times 0.7 =$ _____

2. **Seedlings and Garden.** A greenhouse's seedling count is multiplied by $3 \times 3 \times 3 \times 3 \times 3$. A square garden has 12×12 plants.

a. Write the seedling product as a power. _____

b. Write the garden product as a power. _____

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

d. What does the exponent count? _____

3. **Game Rounds.** A score is multiplied by 4 in each of six rounds: $4 \times 4 \times 4 \times 4 \times 4 \times 4$. 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 $15 \times 15 \times 15 \times 15$. Write this as a power. Name the base and exponent.

Hint *Count the factors of 15.*

Show your work.

Power_____

5. **Block Tower.** Lena wrote the product $6 \times 6 \times 6 \times 6$ as the power 6^6. Justify or correct her 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 $1/5 \times 1/5$ as a power. _____

b. Write 20^3 as a product of factors. _____

Show your work.

7. **Growing Bacteria.** In each growth period, a bacteria count triples. After 1 period there are 3 bacteria.

a. Write the number of bacteria after 4 periods as a power of 3. _____

b. Find the number of bacteria after 4 periods. _____ bacteria

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

8. **Swapped Numbers.** Compare 2^5 and 5^2.

a. Write each power in expanded form. _____

b. Which power has more factors? _____

FIND THE ERROR

explain the mistake, then fix it

9. Imani's Work. Imani read the power 3^5 and wrote: "3 × 5 = 15, so 3^5 equals 15." Explain her mistake. Then write 3^5 correctly as a product.

TEST PRACTICE

choose the best answer

10. In 8^3, the exponent is –

A 8 **B** 3 **C** 24 **D** 11

11. The exponent tells you how many –

A times the base is used as a factor **B** times to add the base

C digits are in the value **D** times to multiply by 10

SELF-CHECK CODE

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

81 L	3^5 M	15^4 L	2^5 Y	4^6 U	$(1/5)^2$ I	6^4 T	12 Z	3^4 P	6^6 Q

#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 #___