Name_____ Date_____ Period_____

LESSON 6-4 · SESSION 2 · PRACTICE · FORM A

Order of Operations with Powers

Learning target – I can evaluate an expression that contains grouping symbols and powers using the order of operations. · 6.EE.A.2c

REMEMBER

- Order: **1.** grouping ( ) **2.** powers **3.** × and ÷ left to right **4.** + and − left to right.
- × and ÷ are partners: do whichever comes first from the left. So are + and −.
- An exponent applies to its base, including a group in parentheses: $2 \times 3^2 = 2 \times 9 = 18$.

WORKED EXAMPLE

Evaluate $50 - (1 + 2)^2 \times 4$.

Step 1 Grouping: $1 + 2 = 3$, so $50 - 3^2 \times 4$.

Step 2 Power: $3^2 = 9$, so $50 - 9 \times 4$.

Step 3 Multiply, then subtract: $50 - 36 = 14$.

Answer **14**

WORDS **order of operations** *(orden de las operaciones)* · **grouping symbols** *(símbolos de agrupación)* · **left to right** *(de izquierda a derecha)*

PRACTICE

show your work · label units

1. Evaluate each expression.

a. $20 - 3 \times 4 =$ ____

b. $(20 - 3) \times 4 =$ ____

c. $4^2 - 6 \div 2 =$ ____

d. $2 \times 3^3 =$ ____

e. $30 \div 5 \times 2 =$ ____

f. $18 - 10 + 3 =$ ____

2. **Two Students.** Two students evaluate $8 + 4 \times 3^2 - 10$. One works left to right after the power. The other follows the order of operations.

a. Do the power first: $3^2 =$ _____

b. Multiply next: $4 \times$ ___ = _____

c. Add and subtract left to right. Value: _____

d. Why does working only left to right give a different value? _____

3. **Parentheses Power.** Evaluate $(4 + 2)^2 \div 4 + 13$.

Hint *Grouping first, then the power.*

Show your work.

Value_____

4. **Four Steps.** Evaluate $5^2 + 8 \times (10 - 4) \div 2$.

Hint *Show one step on each line.*

Show your work.

Value_____

5. Dara's Claim. Dara says $2 + 3 \times 4^2$ has a value of 80. Justify or correct her answer.

Hint *Power, then multiply, then add.*

Show your work.

Value_____

6. Place the Parentheses. The value of $24 \div 4 + 2 \times 3$ is 12. Insert ONE pair of parentheses so the value changes. Evaluate your new expression.

Hint *Not every grouping changes the value. Test yours.*

Show your work.

New value_____

7. Kwame's Claim. Kwame says $4 \times 3^2 + 6$ has a value of 150. Justify or correct his answer.

Hint *Did Kwame square before he multiplied?*

Show your work.

Value_____

8. Two Readings. Use the expressions $4 + 2 \times 6$ and $(4 + 2) \times 6$.

a. $4 + 2 \times 6 =$ _____

b. $(4 + 2) \times 6 =$ _____

c. What did the parentheses change? _____

FIND THE ERROR

explain the mistake, then fix it

9. Marcus's Work. Marcus evaluated $10 + 2 \times 5^2$. He multiplied 2×5 first, then squared that result, and got 110. Explain his mistake. Then find the correct value.

_____

_____

_____

TEST PRACTICE

choose the best answer

10. Find $(2 + 3) \times 4$.

A 14 **B** 20 **C** 24 **D** 9

11. In the order of operations, powers come –

A before × and ÷

B after + and –

C last

D before grouping symbols

SELF-CHECK CODE *find your answer · copy its letter into that problem's box · spell a math word*

22 O	34 P	150 X	98 Q	16 S	49 W	42 R	50 E	110 J	80 Z

#2c	#3	#4	#5	#7	#8a

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