LESSON MAKER PRO

Operation Order

Evaluate expressions one step at a time.

GRADE 6 · 6.AF.A.15.d

6.AF.A.15.d "Evaluate expressions (which may include absolute value and whole number exponents) with respect to order of operations."

NAME _____ DATE _____

ORDER MATTERS

First, work inside parentheses or absolute value bars. Follow the order of operations inside them too: exponents, then multiplication and division from left to right, then addition and subtraction from left to right. After the groupings are evaluated, follow that same order for the rest of the expression.

WORKED EXAMPLE

Evaluate $11 + |5^3 - 117| / 4$.

1. Evaluate the exponent inside the bars: $5^3 = 125$.
2. Finish inside the bars: $|125 - 117| = |8| = 8$.
3. Divide: $8 / 4 = 2$.
4. Add: $11 + 2 = 13$.

Answer: 13

PRACTICE 6 problems

1 Evaluate $6 + 2^2 \times 7$.

ANSWER _____

2 Evaluate $(18 - 6)^2 / 9$.

ANSWER _____

3 Evaluate $|8 - 20| + 2^2$.

ANSWER _____

4 Evaluate $30 / (7 + 8) + 2^2$.

ANSWER _____

5 Evaluate $|6^2 - 10| / 2$.

ANSWER _____

6 Evaluate $2 \times (|9 - 21| - 6)^2$.

ANSWER _____

APPLY IT Show your work

1 At a school fair, you earn 2^2 tickets for each of 7 games you win. You spend 18 tickets on a prize. Write and evaluate an expression for the tickets you have left.

WORK SPACE

ANSWER _____

2 A music app gives you $(9 - 6)^2$ credits for each playlist you finish. You finish 2 playlists and spend 8 credits on a song. Write and evaluate an expression for your remaining credits.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Evaluate $|(8 - 14)^2 - 20| + 30 / (9 - 6)$. Show the order you followed inside the absolute value bars.

WORK SPACE AND ANSWER

ANSWER KEY

Operation Order

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Evaluate $6 + 2^2 \times 7$.	**34**
2	Evaluate $(18 - 6)^2 / 9$.	**16**
3	Evaluate $\lvert 8 - 20 \rvert + 2^2$.	**16**
4	Evaluate $30 / (7 + 8) + 2^2$.	**6**
5	Evaluate $\lvert 6^2 - 10 \rvert / 2$.	**13**
6	Evaluate $2 \times (\lvert 9 - 21 \rvert - 6)^2$.	**72**

PART 2 · APPLY IT

1. **$2^2 \times 7 - 18 = 10$ tickets** Evaluate the exponent first, then multiply and subtract: $4 \times 7 - 18 = 10$.
2. **$(9 - 6)^2 \times 2 - 8 = 10$ credits** Evaluate the parentheses, then the exponent: $3^2 \times 2 - 8 = 9 \times 2 - 8 = 10$.

CHALLENGE

26. Inside the bars, $8 - 14 = -6$, then $(-6)^2 = 36$, and $\lvert 36 - 20 \rvert = 16$. Also, $30 / (9 - 6) = 10$, so $16 + 10 = 26$.

For the word problems, accept equivalent expressions with the correct units. In the challenge, look for the exponent being evaluated after the subtraction in parentheses but before subtracting 20.