LESSON MAKER PRO

Power Order

Evaluate expressions by replacing variables and following the order of operations.

GRADE 7 · 7.PFA.2.d

7.PFA.2.d "Use the order of operations and apply the properties of real numbers to evaluate algebraic expressions for given replacement values of the variables. Exponents are limited to 1, 2, 3, or 4 and bases are limited to positive integers..."

NAME _____ DATE _____

REPLACE, THEN SOLVE

First replace each variable with its given value, using parentheses around a negative value. Then evaluate grouping symbols, exponents and square roots, multiplication and division, and addition and subtraction from left to right. Absolute value is the distance from zero, so its value is never negative.

WORKED EXAMPLE

Evaluate 6a^2 + sqrt(121) when a = 7.

1. Replace a: 6(7)^2 + sqrt(121)
2. Evaluate the power and root: 6(49) + 11
3. Multiply and add: 294 + 11 = 305

Answer: 305

PRACTICE 6 problems

1 Evaluate 8x - 13 when x = -5/3.

ANSWER _____

2 Evaluate |y + 14| / 15 when y = -23.

ANSWER _____

3 Evaluate [16 - 9m] when m = -4/5.

ANSWER _____

4 Evaluate n^3 + 10 when n = -4.

ANSWER _____

5 Evaluate 17 - p^4 when p = -3.

ANSWER _____

6 Evaluate sqrt(144) + |q - 19| when q = 27.

ANSWER _____

APPLY IT Show your work

1 An esports club uses the score formula S = 3w^3 - 28, where w is the number of bonus rounds a player completes. What score does a player earn when w = 4?

WORK SPACE

ANSWER _____

2 A sneaker design contest uses the rating formula R = |5d - 41| + sqrt(169), where d is the number of design votes. What is the rating when d = 9?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Evaluate [a^3 - |b|] / c + sqrt(225) when a = -3, b = -8, and c = 5.

_____

_____

ANSWER KEY

Power Order

GRADE 7 · 7.PFA.2.d

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Evaluate 8x - 13 when x = -5/3.	**-79/3**
2	Evaluate |y + 14| / 15 when y = -23.	**3/5**
3	Evaluate [16 - 9m] when m = -4/5.	**116/5**
4	Evaluate n^3 + 10 when n = -4.	**-54**
5	Evaluate 17 - p^4 when p = -3.	**-64**
6	Evaluate sqrt(144) + |q - 19| when q = 27.	**20**

PART 2 · APPLY IT

1. **164** Substitute 4 for w: S = 3(4)^3 - 28. Then 3(64) - 28 = 164.
2. **17** Substitute 9 for d: R = |5(9) - 41| + sqrt(169). The value is |4| + 13, which equals 17.

CHALLENGE

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Accept equivalent values, including unsimplified fractions that equal the listed answer. Check that students use parentheses when replacing a variable with a negative number and follow the order of operations.