LESSON MAKER PRO

Expression Lab

Substitute, simplify, and check your results

HIGH SCHOOL · A1.A.3.4

A1.A.3.4 "Evaluate linear, absolute value, rational, and radical expressions. Include applying a nonstandard operation such as x ⊙ y=2x+y"

NAME _____ DATE _____

EVALUATE IN ORDER

Replace each variable with its given value, then follow the order of operations. For a custom operation, put the inputs into its rule in the order given. Check that you are not dividing by zero or taking the square root of a negative number.

WORKED EXAMPLE

If x ⊙ y = 5x - y, evaluate 13 ⊙ 17.

1. Substitute: 5(13) - 17.
2. Multiply: 65 - 17.
3. Subtract: 48.

Answer: 48

PRACTICE 6 problems

1 Evaluate 4x - 7 when x = -3.

ANSWER _____

2 Evaluate |3x + 8| when x = -4.

ANSWER _____

3 Evaluate (x + 6)/(x - 2) when x = -2.

ANSWER _____

4 Evaluate sqrt(x + 9) - 2x when x = 7.

ANSWER _____

5 If x ⊙ y = 2x + y, evaluate (-4) ⊙ 9.

ANSWER _____

6 Evaluate |x - 8|/(x + 1) when x = 2. State why the expression is defined.

ANSWER _____

APPLY IT Show your work

1 A phone has 120 units of free storage. Each saved clip uses 4 units, and each minute of new video uses 2 units. The minutes of new video that fit after saving m clips are V = (120 - 4m)/2. How many minutes fit after saving 18 clips?

WORK SPACE

ANSWER _____

2 A game awards bonus points using B = |s - 40| + sqrt(t), where s is your score and t is the number of treasure tokens. Find B when s = 34 and t = 100.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Define x ⊙ y = (x + y)/(x - y). Evaluate (sqrt(64) ⊙ 6) ⊙ 4. Show the result of each operation.

WORK SPACE AND ANSWER

Expression Lab

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Evaluate 4x - 7 when x = -3.	**-19**
2	Evaluate |3x + 8| when x = -4.	**4**
3	Evaluate (x + 6)/(x - 2) when x = -2.	**-1**
4	Evaluate sqrt(x + 9) - 2x when x = 7.	**-10**
5	If x ⊙ y = 2x + y, evaluate (-4) ⊙ 9.	**1**
6	Evaluate |x - 8|/(x + 1) when x = 2. State why the expression is defined.	**2; the denominator is 3, not zero.**

PART 2 · APPLY IT

1. **24 minutes** Substitute m = 18: V = (120 - 4(18))/2 = 48/2 = 24.
2. **16 bonus points** Substitute the values: B = |34 - 40| + sqrt(100) = 6 + 10 = 16.

CHALLENGE

sqrt(64) = 8, so 8 ⊙ 6 = (8 + 6)/(8 - 6) = 7. Then 7 ⊙ 4 = (7 + 4)/(7 - 4) = 11/3.

Accept equivalent fractions for the challenge answer. In problem 6, accept any explanation that identifies the denominator as nonzero.