LESSON MAKER PRO

Function Value Quest

Practice, apply, and explain how to evaluate a function.

GRADE 8 · 8.AF.D.14

8.AF.D.14 "Evaluate functions defined by a rule or an equation, given values for the independent variable."

NAME _____ DATE _____

SUBSTITUTE AND SIMPLIFY

To evaluate a function, replace every x in its rule with the given input. Use the order of operations to find the output, and keep parentheses around a negative input.

WORKED EXAMPLE

If f(x) = 6x - 13, find f(9).

1. Substitute 9 for x: f(9) = 6(9) - 13.
2. Multiply: f(9) = 54 - 13.
3. Subtract: f(9) = 41.

Answer: f(9) = 41

PRACTICE 6 problems

1 If f(x) = 3x + 5, find f(2).

ANSWER _____

2 If g(x) = 18 - 2x, find g(4).

ANSWER _____

3 If h(x) = x^2 - 5, find h(-3).

ANSWER _____

4 If p(x) = x/4 + 3, find p(8).

ANSWER _____

5 If q(x) = 2(x + 5), find q(-1).

ANSWER _____

6 If r(x) = (x^2 + 3)/2, find r(5).

ANSWER _____

APPLY IT Show your work

1 An arcade game awards 4 points per level you finish and 2 bonus points. Your total is P(x) = 4x + 2, where x is the number of levels finished. What is P(5), and what does it mean?

WORK SPACE

ANSWER _____

2 A bike rental costs $8 to start, plus $3 per hour. The total cost is C(x) = 8 + 3x, where x is the number of hours. What is the cost for 4 hours?

WORK SPACE

ANSWER _____

CHALLENGE One step up

For $f(x) = x^2 - 4x + 2$, find f(-2) and f(3). Which output is greater? Show your substitutions to explain.

WORK SPACE AND ANSWER

ANSWER KEY

Function Value Quest

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	If f(x) = 3x + 5, find f(2).	**11**
2	If g(x) = 18 - 2x, find g(4).	**10**
3	If h(x) = x^2 - 5, find h(-3).	**4**
4	If p(x) = x/4 + 3, find p(8).	**5**
5	If q(x) = 2(x + 5), find q(-1).	**8**
6	If r(x) = (x^2 + 3)/2, find r(5).	**14**

PART 2 · APPLY IT

1. **P(5) = 22. You have 22 points after finishing 5 levels.** Substitute 5 for x: P(5) = 4(5) + 2 = 22.
2. **$20** Substitute 4 for x: C(4) = 8 + 3(4) = 20.

CHALLENGE

f(-2) = $(-2)^2$ - 4(-2) + 2 = 14. f(3) = 3^2 - 4(3) + 2 = -1. The output f(-2) is greater because 14 > -1.

Accept answers with or without function notation in Part 1. In the challenge, check that the student squares the negative input before subtracting.