Reading Function Values

Explore ideas and representations

Name _____ **Date** _____ **Score** _____ / 10

QUICK REVIEW

A function value is the output at a specified input. If $f(x) = 3x - 2$, then $f(4) = 3(4) - 2 = 10$. In a table, find the requested input first and read its paired output. The notation $f(4)$ does not mean $4f$. Negative inputs need parentheses, and a square is evaluated before multiplication.

Worked example

Example for form 1: evaluate this rule. $y = 2x + 4$ at $x = -1$.

1. Substitute the input $x = -1$, not the output: $y = 2(-1) + 4$. Evaluate the product to get -2.

2. Now combine the constant: $-2 + 4 = 2$. Thus the output corresponding to input -1 is 2.

Answer: $y = 2$

Practice Problems

Show your thinking.

1. Evaluate the linear rule. $y = 3x - 2$ at $x = 4$.

2. Find the output for a negative input. $y = 2x + 5$ at $x = -3$.

3. Evaluate the constant-subtraction rule. $y = -2x + 7$ at $x = 5$.

4. Evaluate at the intercept input. $y = 4x - 6$ at $x = 0$.

5. Evaluate the square rule. $y = 1x^2 + 3$ at $x = -4$.

6. Find the quadratic output. $y = 2x^2 - 1$ at $x = 3$.

7. Table A defines f. Read $f(2)$.

x	y
-2	5
0	1
2	-3
4	-7

8. Table B defines f. Read $f(5)$.

x	y
1	4
3	9
5	2
7	8

9. Table C defines f. Read $f(0)$.

x	y
0	7
2	7
4	1
6	1

10. If $f(x) = 2x + 1$, find $f(5) - f(2)$.

Answer Key

1. $y = 10$
2. $y = -1$
3. $y = -3$
4. $y = -6$
5. $y = 19$
6. $y = 17$
7. $f(2) = -3$
8. $f(5) = 2$
9. $f(0) = 7$
10. 6

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Substitute the input $x = 4$, not the output: $y = 3(4) - 2$. Evaluate the product to get 12.

2. Now combine the constant: $12 - 2 = 10$. Thus the output corresponding to input 4 is 10.

Problem 2

1. Substitute the input $x = -3$, not the output: $y = 2(-3) + 5$. Evaluate the product to get -6.

2. Now combine the constant: $-6 + 5 = -1$. Thus the output corresponding to input -3 is -1.

Problem 3

1. Substitute the input $x = 5$, not the output: $y = -2(5) + 7$. Evaluate the product to get -10.

2. Now combine the constant: $-10 + 7 = -3$. Thus the output corresponding to input 5 is -3.

Problem 4

1. Substitute the input $x = 0$, not the output: $y = 4(0) - 6$. Evaluate the product to get 0.

2. Now combine the constant: $0 - 6 = -6$. Thus the output corresponding to input 0 is -6.

Problem 5

1. Substitute $x = -4$ into the rule: $y = 1(-4)^2 + 3$. Evaluate the product to get 16.

2. Now combine the constant: $16 + 3 = 19$. Thus the output corresponding to input -4 is 19.

Problem 6

1. Substitute $x = 3$ into the rule: $y = 2(3)^2 - 1$. Evaluate the product to get 18.

2. Now combine the constant: $18 - 1 = 17$. Thus the output corresponding to input 3 is 17.

Problem 7

1. Locate input 2 in the first column. The row containing $x = 2$ pairs it with output -3.

2. Therefore $f(2) = -3$. Other rows do not change this value; function notation asks for the output at this particular input.

Problem 8

1. Locate input 5 in the first column. The row containing $x = 5$ pairs it with output 2.

2. Therefore $f(5) = 2$. Other rows do not change this value; function notation asks for the output at this particular input.

Problem 9

1. Locate input 0 in the first column. The row containing $x = 0$ pairs it with output 7.

2. Therefore $f(0) = 7$. Other rows do not change this value; function notation asks for the output at this particular input.

Problem 10

1. Evaluate separately: $f(5) = 2(5) + 1 = 11$ and $f(2) = 2(2) + 1 = 5$.

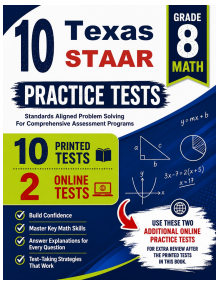
2. Subtract in the requested order: $f(5) - f(2) = 11 - 5 = 6$. This is a difference of outputs, not the output at $5 - 2$.

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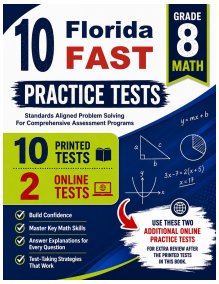
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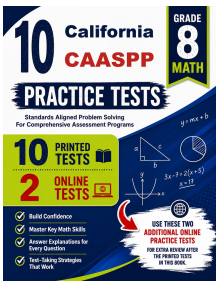
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