

Functions vs. Non-Functions and Function Notation

Name: _____ Date: _____

LEARNING OBJECTIVE

The student will determine whether a relation is a function using the vertical line test and evaluate functions using function notation.

MATERIALS NEEDED

- graph paper
- pencil
- ruler
- string or yarn (about 12 inches)
- index cards

HANDS-ON ACTIVITY

1. On graph paper, plot the points for Relation A: (1,2), (2,4), (3,6), (4,8) and connect them with a line.
2. On a second graph, plot Relation B: (1,2), (1,5), (2,3), (3,7) — do not connect these, just plot the dots.
3. Hold a piece of string vertically and slide it left to right across each graph (the 'vertical line test'): if the string ever touches more than one point at the same x-value, the relation is NOT a function.
4. Label each graph 'Function' or 'Not a Function' based on the test, and write one sentence explaining your reasoning for each.
5. On 3 index cards, create an 'input-output machine': write a function rule like $f(x) = 2x + 1$ on one card, then write 3 input values ($x = 1, 3, 5$) on a second card and calculate/write the 3 outputs $f(1), f(3), f(5)$ on a third card.

QUESTIONS

1. Is Relation A a function? How do you know?

2. Is Relation B a function? How do you know?

3. If $f(x) = 2x + 1$, what is $f(3)$?

4. In your own words, what does it mean for a relation to be a 'function'?
