

1.6 Formalizing Relations and Functions

Relation: x & y working together to create a point

Domain: all of the x-values (x-axis)

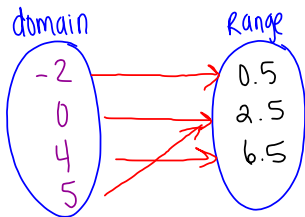
Range: all of the y-values (y-axis)

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$\{(-2, 0.5), (0, 2.5), (4, 6.5), (5, 2.5)\}$

Use a mapping diagram to show the relationship.



Steps:

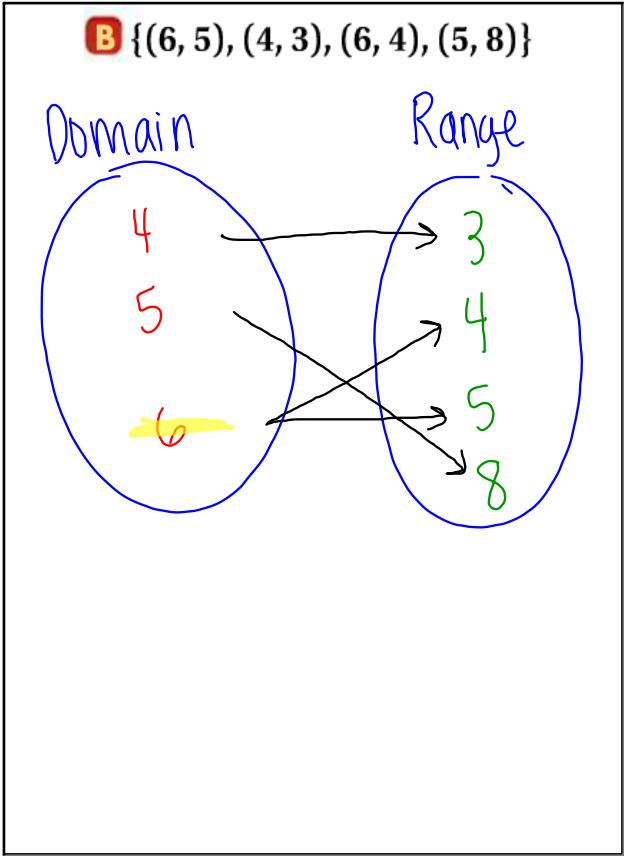
- ① List domain in order from smallest to biggest. DO NOT repeat values
- ② List range from smallest to biggest NO repeats
- ③ draw an arrow from domain to matching range

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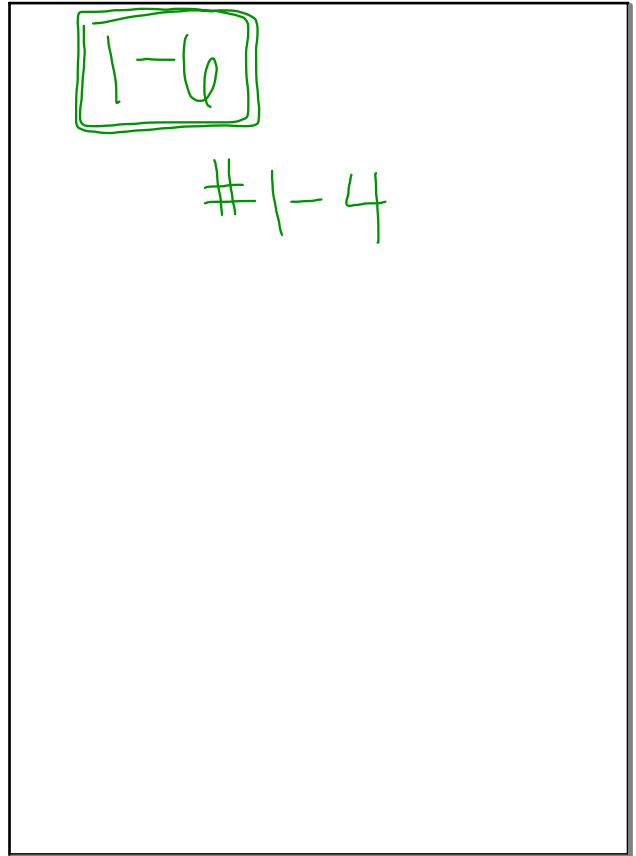
④ decide if it's a function

yes because one arrow from each domain

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Apr 6-11:09 AM



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Exit Slip:

① What are you struggling with?

② Write an equation
y is 3 more than
x

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1. Identify the domain and range of each relation. Represent the relation with a mapping diagram. Is the relation a function?

a. $\{(4.2, 1.5), (5, 2.2), (7, 4.8), (4.2, 0)\}$ b. $\{(-1, 1), (-2, 2), (4, -4), (7, -7)\}$

Domain: _____ Domain: _____
 Range: _____ Range: _____

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Vertical Line Test:

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Problem 2 Identifying Functions Using the Vertical Line Test

Is the relation a function? Use the vertical line test.

A $\{(-4, 2), (-3, 1), (0, -2), (-4, -1), (1, 2)\}$ **B** $y = -x^2 + 3$

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2. Is the relation a function? Use the vertical line test.

a. $\{(4, 2), (1, 2), (0, 1), (-2, 2), (3, 3)\}$ b. $\{(0, 2), (1 - 1), (-1, 4), (0, -3), (2, 1)\}$

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You have seen functions represented as equations involving x and y , such as $y = -3x + 1$. Below is the same equation written using **function notation**.

$$f(x) = -3x + 1$$

Notice that $f(x)$ replaces y . It is read "f of x." The letter f is the name of the function, not a variable. Function notation is used to emphasize that the function value $f(x)$ depends on the independent variable x . Other letters besides f can also be used, such as g and h .

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Problem 3 Evaluating a Function

Reading The function $w(x) = 250x$ represents the number of words $w(x)$ you can read in x minutes. How many words can you read in 8 min?

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Problem 4 Finding the Range of a Function

Multiple Choice The domain of $f(x) = -1.5x + 4$ is $\{1, 2, 3, 4\}$. What is the range?

- A $\{-2, -0.5, 1, 2.5\}$
- B $\{-2.5, -1, 0.5, 2\}$
- C $\{-2.5, -1, -0.5, 2\}$
- D $\{-2.5, -0.5, 1, 2\}$

Step 1:

Step 2:

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