

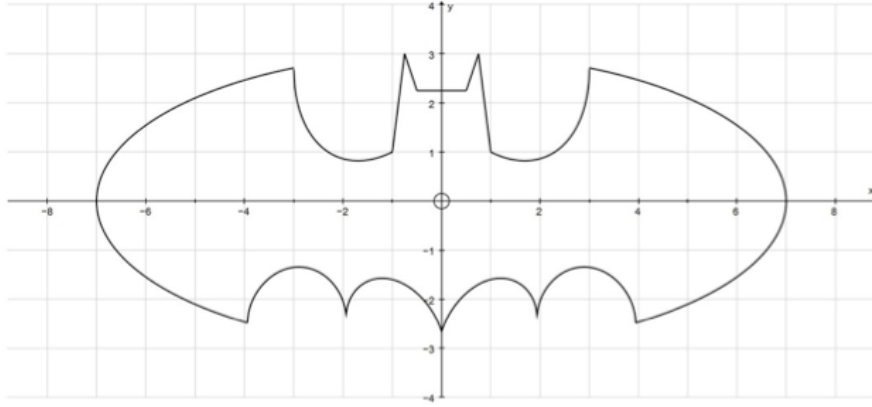
1.2 Functions and Function Notation – Lesson

MCR3U

Jensen

DO IT NOW!

a) State the domain and range of the relation shown in the following graph:



b) Is this a function?

1.1 Review

What determines if a relation is a function or not?

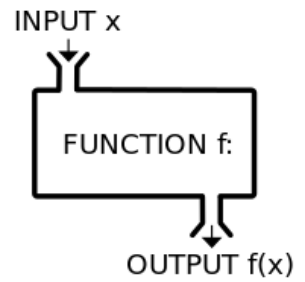
How does the vertical line test help us determine if a relation is a function?

What is domain?

What is range?

Find Values Using Function Notation

What does a function do?



What does function notation look like?

Example 1: For each of the following functions, determine $f(2)$, $f(-5)$, and $f(1/2)$

a) $f(x) = 2x - 4$

b) $f(x) = 3x^2 - x + 7$

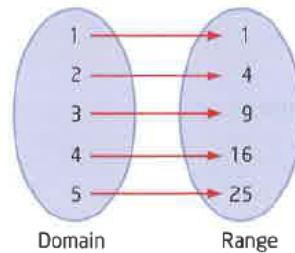
c) $f(x) = 87$

d) $f(x) = \frac{2x}{x^2-3}$

Mapping Diagrams

A mapping diagram is a representation that can be used when the relation is given as a set of ordered pairs. In a mapping diagram, the _____ values in one oval are joined to the _____ values in the other oval using arrows.

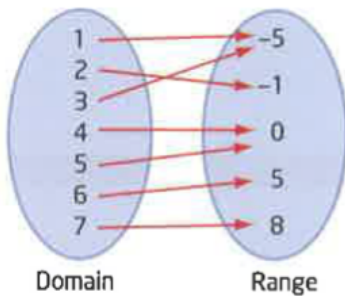
A relation is a function if there is exactly _____ arrow leading from each value in the domain. This indicates that each element in the domain corresponds to exactly one element in the range.



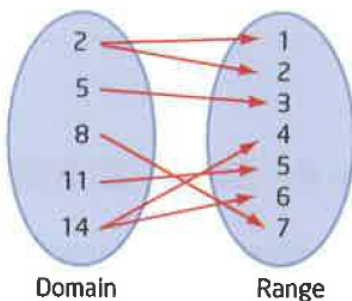
Example 2: Use the mapping diagrams to

- i) write the set of ordered pairs of the relation
- ii) state if the relation is a function

a)



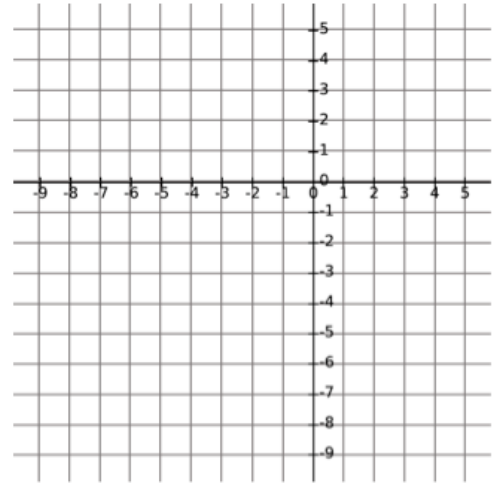
b)



Applications of Function Notation

Example 3: For the function $h(t) = -3(t + 1)^2 + 5$

i) Graph it and find the domain and range



ii) Find $h(-7)$

Example 4: The temperature of the water at the surface of a lake is 22 degrees Celsius. As Geno scuba dives to the depths of the lake, he finds that the temperature decreases by 1.5 degrees for every 8 meters he descends.

i) Model the water temperature at any depth using function notation.

Hint: it is a constant rate of change, therefore it will form a linear relation ($y=mx+b$).

ii) What is the water temperature at a depth of 40 meters?

iii) At the bottom of the lake the temperature is 5.5 degrees Celsius. How deep is the lake?