



# Domain and Range 2

## Student Activity

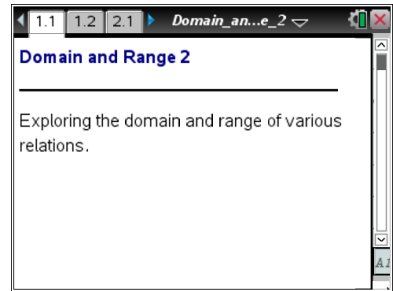


Name \_\_\_\_\_

Class \_\_\_\_\_

Open the TI-Nspire™ document *Domain\_and\_Range\_2.tns*.

What can a graph tell you about domain and range? In this activity, you will explore visual representations of relations to determine their domain and range.



Move to page 1.2.

1. Grab and move point  $P$  to each point on the scatter plot and note the changes.
  - a. Name the ordered pair for point  $P$ . What is the relationship between this ordered pair and the cross mark on each axis?

- b. Grab and drag point  $P$  to each of the circles on the scatter plot. As you move from point to point, record the coordinates of each point in the table.

$x$	$y$

- c. State the domain and range of the relation.
  - d. Where on the graph do you see the domain represented? Where do you see the range represented?

Move to page 2.1.

2. Move point  $P$  back and forth along the entire graph.
  - a. What does the highlighted portion along the  $x$ -axis represent?
  - b. What does the highlighted portion along the  $y$ -axis represent?



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Name \_\_\_\_\_

Class \_\_\_\_\_

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- c. How do the domain and range in this problem differ from the domain and range in question 1?
  
- d. State the domain as an inequality and in interval notation.
  
- e. State the range as an inequality and in interval notation.
  
- f. If the endpoints of the graph were open circles, how would the domain and range change? State the new domain and range as inequalities and in interval notation.

#### Move to page 3.1.

3. Move point  $P$  back and forth along the entire graph.
  - a. State the domain and range of the graph.

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

- b. How does the domain of this graph compare to the domain of the graph in question 1?  
Question 2?
  
- c. How does the range of this graph compare to the range of the graph in question 1?  
Question 2?

#### Move to page 4.1.

4. Move point  $P$  back and forth along the entire graph.
  - a. State the domain and range as inequalities and in interval notation.
  
  
  - b. What is different about the domain and range of this graph compared to the others?



**Move to page 5.1.**

5. Move point  $P$  back and forth along the entire graph.
  - a. State the domain and range as inequalities and in interval notation.
  
  
  - b. What is different about the domain and range of this graph compared to the others?

**Move to page 6.1.**

6. Grab and move the endpoints of the line segment to new locations.
  - a. What do you notice about the domain and range as you drag the endpoints?
  
  
  - b. Move the open endpoint to  $(-1, 4)$  and the closed endpoint to  $(2, -3)$ . State the domain and range as inequalities and in interval notation.

**Move to page 6.2.**

7. Grab and move the endpoints of the line segment to satisfy each of the following conditions:
  - a. The open endpoint is  $(-4, -3)$  and the closed endpoint is  $(3, 4)$ . State the domain and range as inequalities and in interval notation.
  
  
  - b. The domain is  $[-7, 7)$  and the range is  $(-4, 5]$ . Write the domain and range as inequalities. State the endpoints of the line segment and indicate which endpoint is open.
  
  
  - c. Given a domain of  $-3 \leq x < 8$  and a range of  $y = -2$ , state the endpoints of the line segment and indicate which endpoint is open.
  
  
  - d. The domain is  $x = 5$ . State the endpoints of the line segment and indicate which endpoint is open. Compare your answers with another student's. Explain how you can have different answers and still both be correct.



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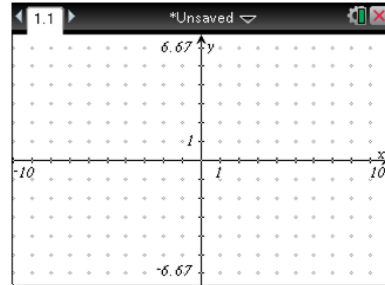
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Class \_\_\_\_\_

8. Sketch a graph and write a description of a function or relation that satisfies the following conditions. Compare your answers with another student's. How are they alike or different?

a. Domain:  $-3 < x \leq 4$ ; Range:  $1 \leq y < 5$



b. Domain:  $(-\infty, \infty)$ ; Range:  $[2, \infty)$

