### Algebra RH

Essential Question: How do we graph linear relationships with restricted domains?

**Do Now:** In a local convenient store, rolls of paper towels sell for \$1.50 each. Due to a recent shortage, the store is only allowing customers to purchase up to 5 rolls. The function rule that describes the relationship between the number of rolls of paper towels purchased (x) and the total cost (y) is y = 1.50x.

Create a table of values for this function rule. Before choosing your input values (x), think about the context of the situation. What numbers should x represent?

X Number of Rolls	Y Total Cost



Think about this...

Does this linear function have a restricted domain? Does the linear function have a restricted range? What does the graph of this function look like?

Domain:

Range:

## **Graphing Linear Functions with Restricted Domains**

1. Graph the following linear function using the domain  $-1 \le x \le 3$  where x is a real number.





Represent the **range** of the function using an inequality statement and interval notation.

Inequality Statement:\_\_\_\_\_

Interval Notation: \_\_\_\_\_

2. Graph the following linear function using the domain  $0 \le x \le 2$  where x is a real number.

#### 4y + 12x = 8

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Represent the **range** of the function using an inequality statement and interval notation.

Inequality Statement:\_\_\_\_\_

Interval Notation: \_\_\_\_\_

# Defining the Domain and Range from a Graph

Consider the linear functions graphed below. Define the **domain** and **range** of the function using an inequality statement and interval notation.



### The Take Away

Linear functions with restricted domains have \_\_\_\_\_\_ ranges. The domains and ranges of the functions can be defined using an inequality statement or interval notation. 1. Graph the following linear function using the domain  $-6 \le x \le -2$  where x is a real number.

y - x = 1



Represent the **range** of the function using an inequality statement and interval notation.

Inequality Statement:\_\_\_\_\_

Interval Notation: \_\_\_\_\_

2. Graph the following linear function using the domain  $-8 \le x \le 4$  where x is a real number.

y = -0.25x + 2



Represent the **range** of the function using an inequality statement and interval notation.

Inequality Statement:

Interval Notation: \_\_\_\_\_