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 $(\mathrm{y})$ is $\mathbf{y}=\mathbf{1 . 5 0 x}$.

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 <br> Number of Rolls | Y <br> Total Cost |
| :--- | :--- |
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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:

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| :--- | :--- | :--- | :--- | :--- | :--- |
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## Graphing Linear Functions with Restricted Domains

1. Graph the following linear function using the domain $\mathbf{- 1} \leq \mathbf{x} \leq \mathbf{3}$ where $\mathbf{x}$ is a real number.

$$
y=2 x-1
$$



Represent the range of the function using an inequality statement and interval notation.
Inequality Statement: $\qquad$
Interval Notation: $\qquad$
2. Graph the following linear function using the domain $\mathbf{0} \leq \mathbf{x} \leq \mathbf{2}$ where $\mathbf{x}$ is a real number.
$4 y+12 x=8$

| $\mathbf{x}$ | $\mathbf{y}$ |
| :---: | :---: |
|  |  |
|  |  |
|  |  |



Represent the range of the function using an inequality statement and interval notation.
Inequality Statement: $\qquad$
Interval Notation: $\qquad$

## 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.
3.


## Domain:

## Range:

4. 



## Domain:

## Range:

## The Take Away

Linear functions with restricted domains have $\qquad$ 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 $-6 \leq x \leq-2$ where $\mathbf{x}$ is a real number.
$y-x=1$


Represent the range of the function using an inequality statement and interval notation. Inequality Statement: $\qquad$
Interval Notation: $\qquad$
2. Graph the following linear function using the domain $-\mathbf{8} \leq \mathbf{x} \leq \mathbf{4}$ where $\mathbf{x}$ is a real number.

$$
y=-0.25 x+2
$$



Represent the range of the function using an inequality statement and interval notation. Inequality Statement: $\qquad$
Interval Notation: $\qquad$

