

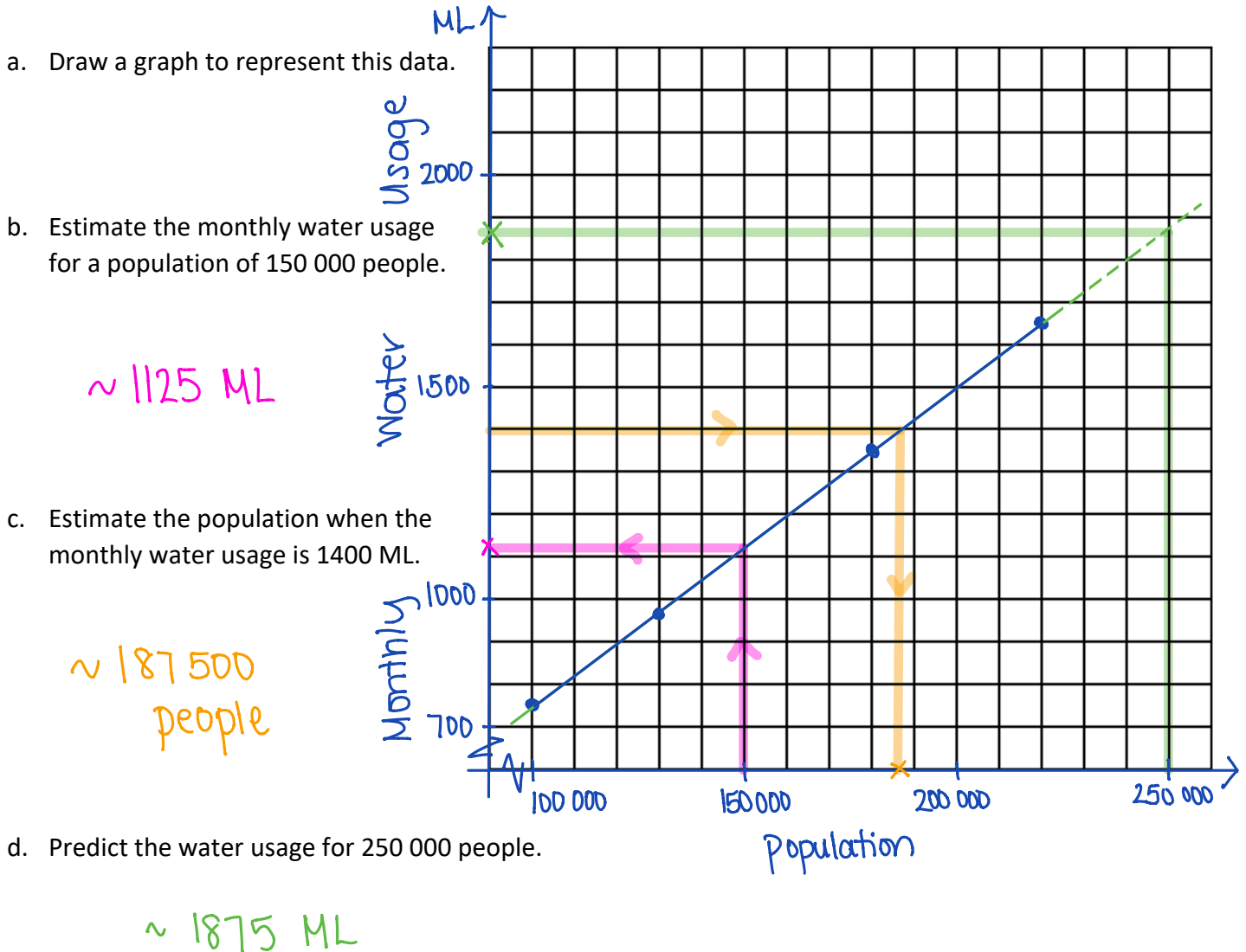
Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Learning Goal 4.4</b>	I can interpolate or extrapolate to solve problems.
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**Example** A city has grown over the past few years. This table shows how the volume of water used each month is related to the population.

Population	Monthly Water Usage (ML)
100 000	750
130 000	975
180 000	1350
220 000	1650



**Interpolate** a type of estimation where new points are constructed within the range of the given data

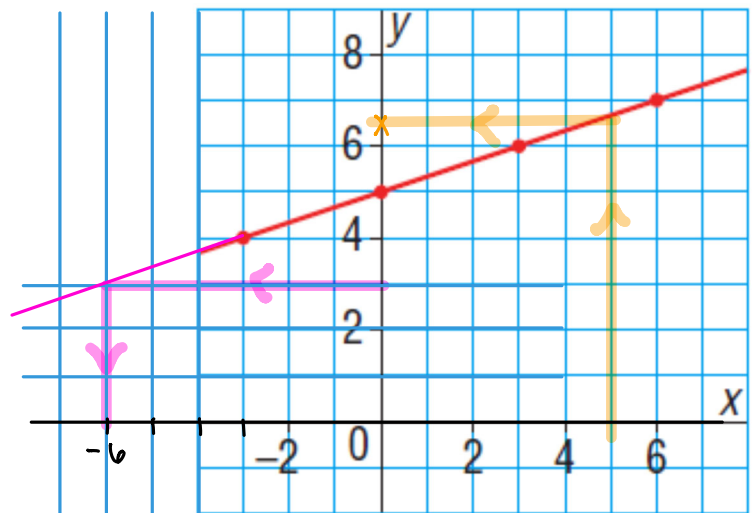
**Extrapolate** a type of estimation where new points are constructed outside the range of the given data.

**Example** Use this graph of a linear relation to answer the following questions.

- a. Determine the value of  $x$  when  $y = 3$ .  
Is this interpolation or extrapolation?

We had to extend the given data to find the value asked for.

$$\text{when } y = 3, \\ x = -6$$



- b. Determine the value of  $y$  when  $x = 5$ .  
Is this interpolation or extrapolation?

The data asked for was within the given data

$$\text{when } x = 5, y = 6.5$$