Curriculum Outcomes:

(PR1) Generalize a pattern arising from a problem-solving context using linear equations and verify by substitution.

(PR2) Graph linear relations, analyze the graph and interpolate or extrapolate to solve problems.
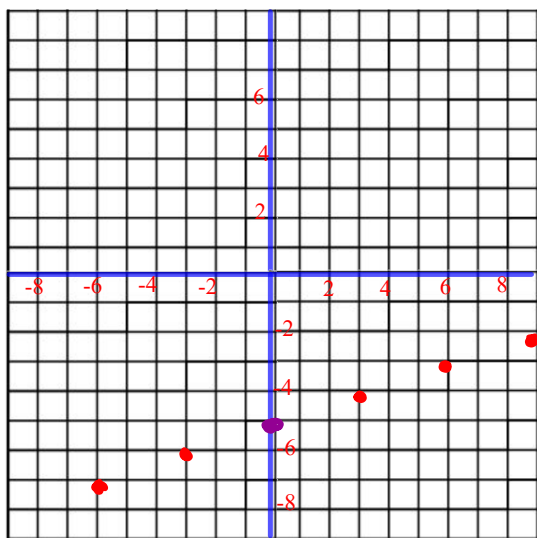
Student Friendly: Gathering information on and off the graphs.

Warm Up

1) Sketch the graph for the following

a) b) $y = \frac{1}{3}x - 5$

$\frac{\Delta y}{\Delta x} = \frac{rise}{run} = \frac{1}{3}$

x= 0

(0,-5)

$2x - y = 6$

$-y = -2x + 6$

$\frac{-y}{-1} = \frac{-2x}{-1} + \frac{6}{-1}$

$y = 2x - 6$

$\frac{\Delta y}{\Delta x} = \frac{rise}{run} = \frac{2}{1}$

x= 0

(0,-6)
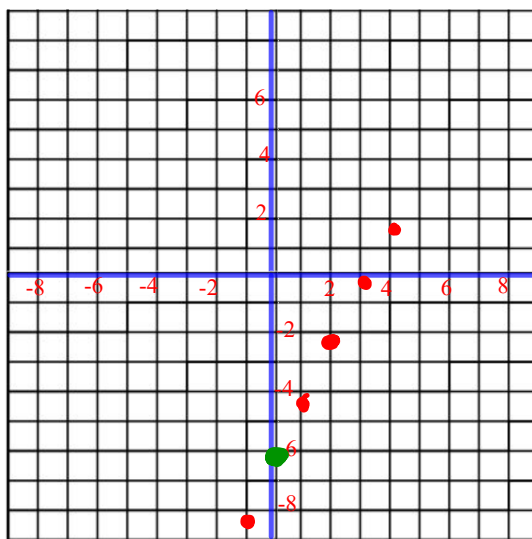
Warm Up

2) Match the graph with the equation

a) $\overset{2}{x} + 3y = \overset{\text{x}}{6}$
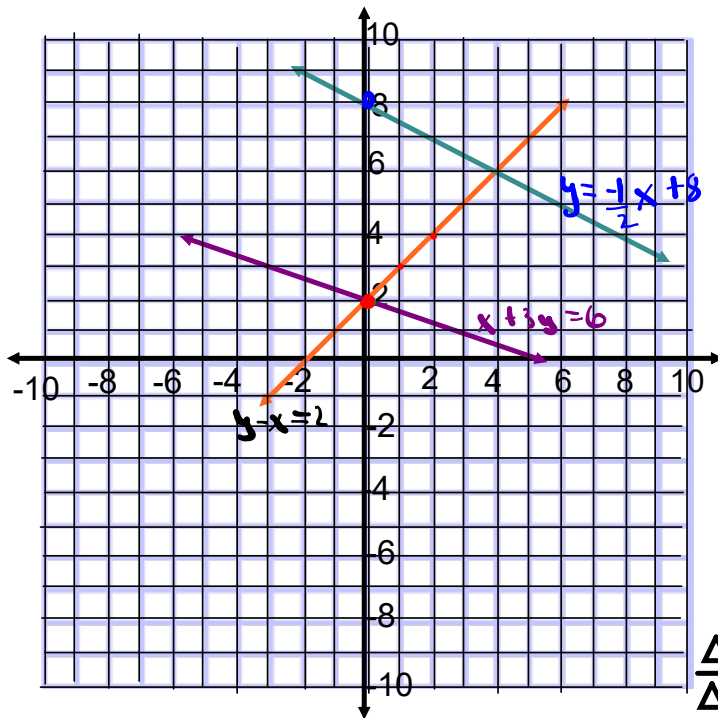
$$\frac{3y}{3} = \frac{-x}{3} + \frac{6}{3}$$

$$y = -\frac{1}{3}x + 2$$

$$\frac{\Delta y}{\Delta x} = \frac{\text{rise}}{\text{run}} = \frac{-1}{3}$$

x= 0

(0, 2)

Purple

y= -½x +8

x+3y=6

y-x=2

b) $y = \frac{-1}{2}x + 8$

$$\frac{\Delta y}{\Delta x} = \frac{\text{rise}}{\text{run}} = \frac{-1}{2}$$
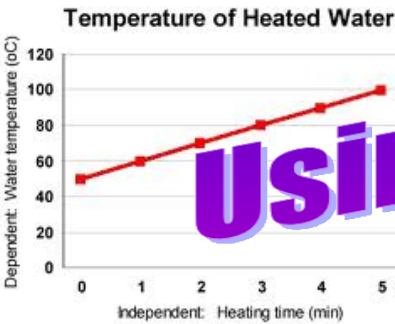
x= 0

(0, 8)

c) $y - \overset{+x}{x} = \overset{+x}{2}$

$$y = \frac{1}{1}x + 2$$

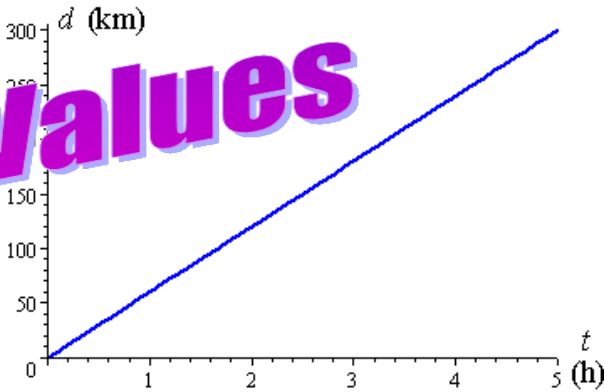$$\frac{\Delta y}{\Delta x} = \frac{\text{rise}}{\text{run}} = \frac{1}{1}$$

x= 0

(0, 2)

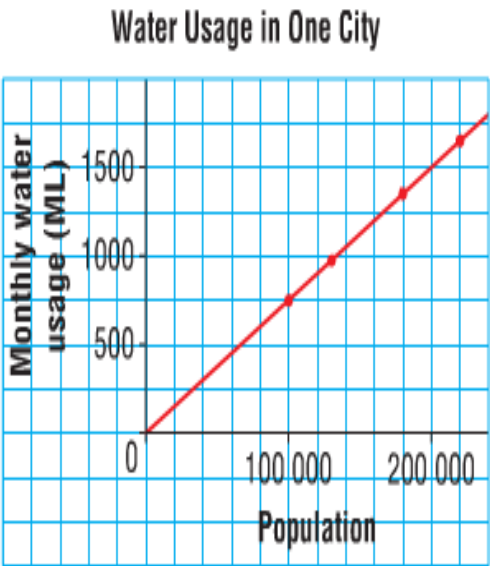orange

Temperature of Heated Water

Using Graphs to Estimate Values

A city has grown over the past few years. This table and graph show how the volume of water used each month is related to the population.

Water Usage in One City

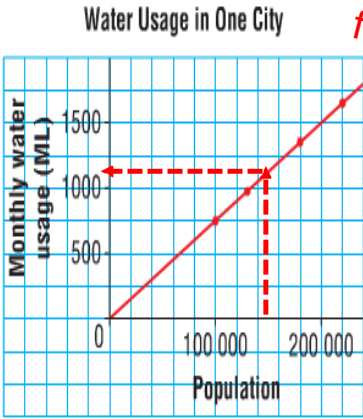| Population x	Monthly Water Usage (ML)
100 000	750
130 000	975
160 000	1 200
190 000	1 425

1 ML is 1 000 000 L.

a) Estimate the monthly water usage for a population of 150 000 people.

b) Predict the water usage for 250 000 people.

a)

A city has grown over the past few years. This table and graph show how the volume of water used each month is related to the population.

Estimate the monthly water usage for a population of 150 000 people.

1100 mL

Population	Monthly Water Usage (ML)
100 000	750
130 000	975
160 000	1 200
190 000	1 425

1 ML is 1 000 000 L.

Water Usage in One City

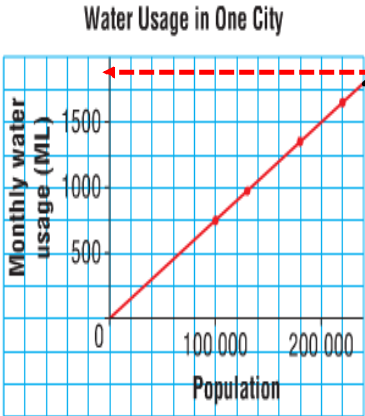**Interpolation...** *estimate values that lie between two data points*

b)

A city has grown over the past few years. This table and graph show how the volume of water used each month is related to the population.

Predict the water usage for 250 000 people.

Water Usage in One City

1 ML is 1 000 000 L.

| Population	Monthly Water Usage (ML)
100 000	750
130 000	975
160 000	1 200
190 000	1 425
220 000	1650
250 000	1875

Use a ruler to extend the line.

1875ml

Extrapolation... **estimate values that lie outside the given data points**

Jenna borrows money from her parents for a school trip. She repays the loan by making regular weekly payments. The graph shows how the money is repaid over time. The data are discrete because payments are made every week.
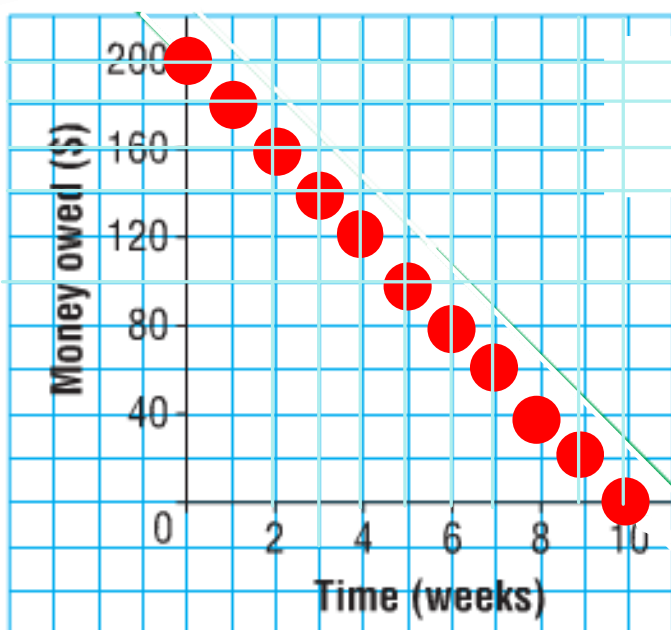
a) How much money did Jenna originally borrow? **$200**

b) How much money does she still owe after 3 weeks? **$140**

c) How many weeks will it take Jenna to repay one-half of the money she borrowed? **5 weeks**

Jenna's Loan Payments

Money owed ($) vs. Time (weeks)

Maya's Jog
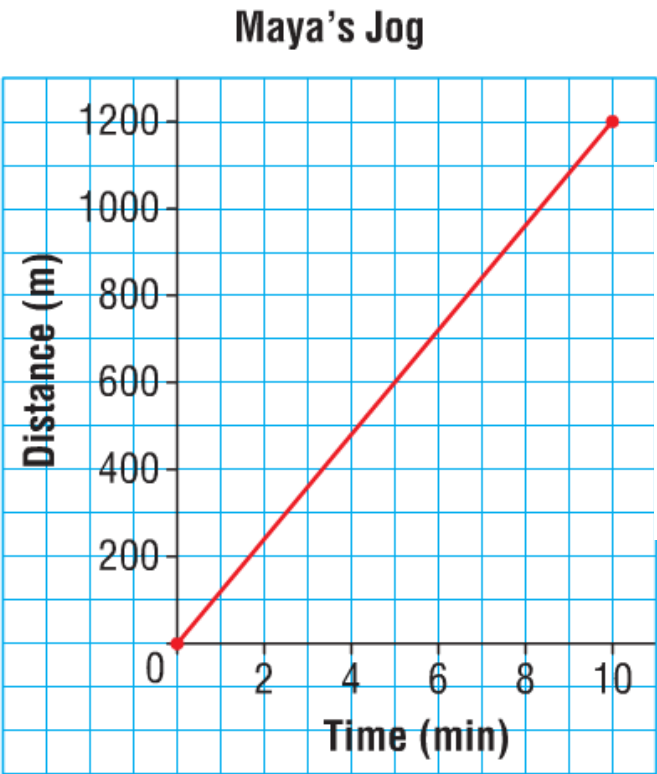
Use the graph.

a) Predict how long it will take Maya to jog 2000 m.

17 min

b) Predict how far Maya will jog in 14 min.

1630m

c) What assumption did you make?

-We assume nothing changes.

She runs at a constant rate

Which questions can be answered using interpolation?
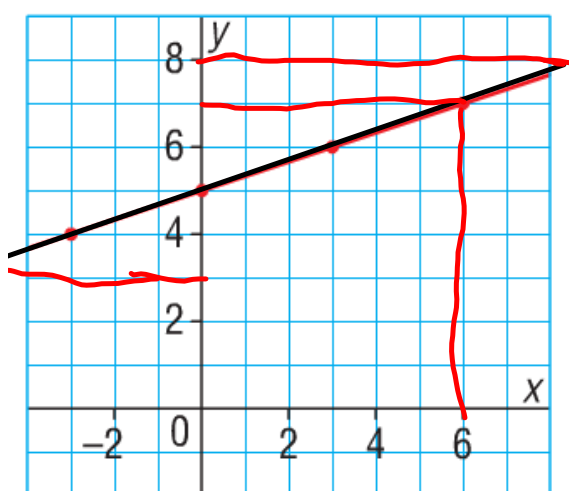
Determine the values of y for each of the following values of x.

a) x = -3   b) x =4   c) x = 8

y = 4   y = 6.4   y = 7.8

Determine the values of x for each of the following values of y.

a) y = 3   b) y = 7   c) y = 8

x = -6   x = 6   x = 9

Which questions will have to be answered using extrapolation?

Class/Homework

Homework

-click on the "Homework" link on my teachers page for optional review questions

- If you have any questions you can contact me on the
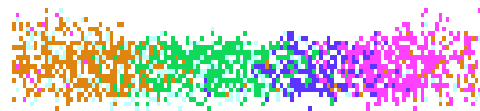
Remind app

or

through email:

 melanie.burns@nbed.nb.ca

Class/Homework

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HOMEWORK

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