March 28, 2019

UNIT 6: LINEAR RELATIONS

4.5: USING GRAPHS TO ESTIMATE VALUES

K. SEARS
MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Patterns and Relations 2" OR "PR2" which states:

"Graph linear relations, analyze the graph and interpolate or extrapolate to solve problems."

Warm Up

$y = mx + b$

1) Sketch the graph for the following

a) $2x - y = 6$

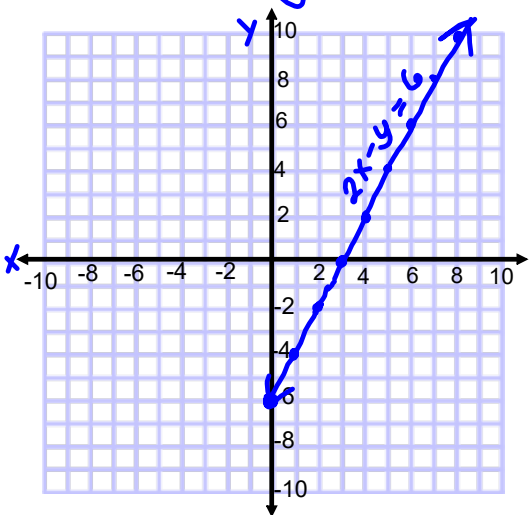
$+y \quad +y$

$2x - 6 = y + 6 - 6$

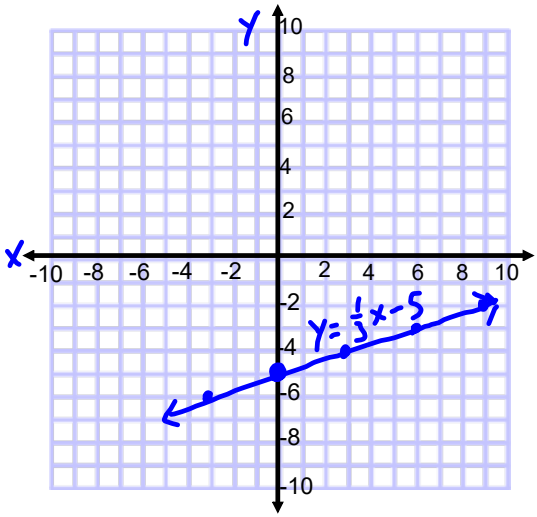
$2x - 6 = y$

$b = -6$

$m = \frac{2}{1}$

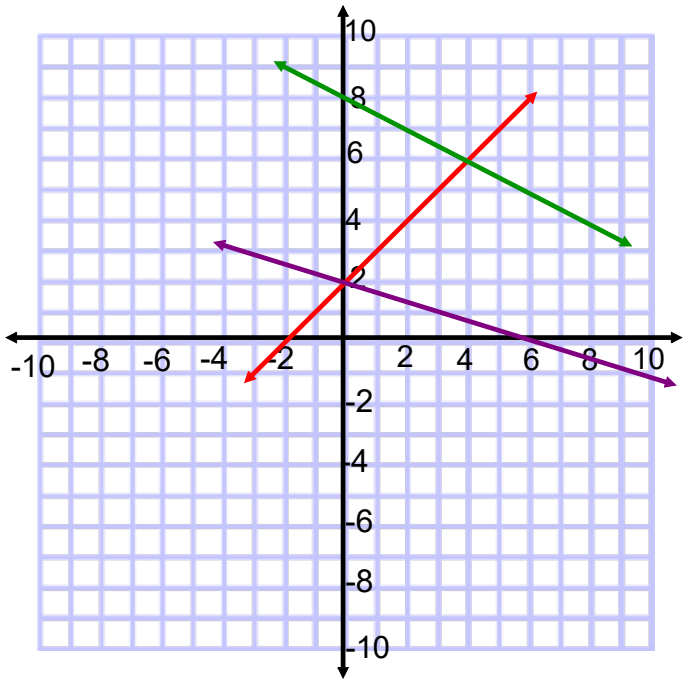


b) $y = \frac{1}{3}x - 5$



Warm Up

2) Match the graph with the equation



a) $x + 3y = 6$

$-x \quad -x$

$\frac{3y}{3} = \frac{-x}{3} + \frac{6}{3}$

$y = \frac{-1}{3}x + 2$ ✓

b) $y = \frac{-1}{2}x + 8$ ✓

c) $y - x = 2$

$+x \quad +x$

$y = x + 2$ ✓

Warm Up

3) Amanda is hosting a party, and her mom is ordering pizza. Each Pizza ordered will cost $15.00. There is a flat rate of $4.00 for delivery, no matter how many pizzas are ordered. Write an equation that represents the total cost of the order.

$C = 15p + 4$

4) Determine the equations represented by the information in the tables of values below.

a)

t	d
1	12
2	9
3	6

(+1, +1; d: −3, −3)

$d = -3t + 15$

$d = -3(2) + 15 = -6 + 15 = 9$

$d = -3(3) + 15 = -9 + 15 = 6$

b)

x	y
5	27
6	32
7	37

(+1, +1; y: +5, +5)

$y = 5x + 2$

$y = 5(6) + 2 = 30 + 2 = 32$

$y = 5(7) + 2 = 35 + 2 = 37$

HOMEWORK QUESTIONS???

(pages 188 / 189 / 190, 3 - 9, 11 - 13)

VOCABULARY - SECTION 4.5:

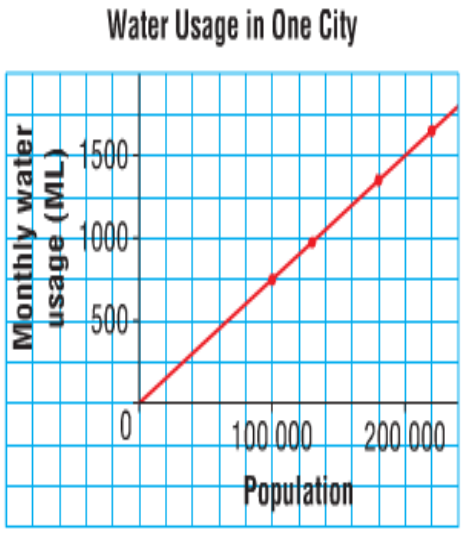
1. **INTERPOLATION:** Estimating values **WITHIN** values in graphs.

2. **EXTRAPOLATION:** Estimating values **BEYOND** values in graphs.

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.

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

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)

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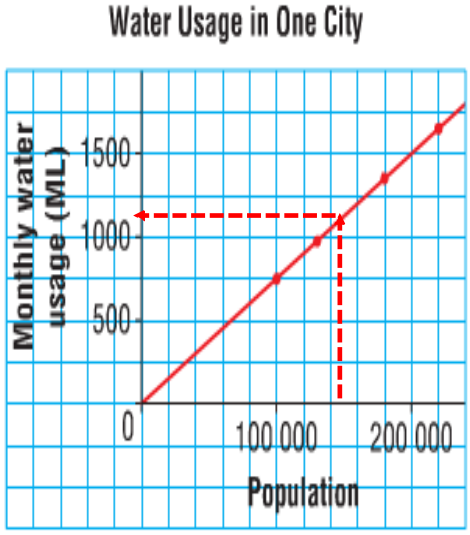

Interpolation: ***Estimate values that lie between two data points.***

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.

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100 000	750
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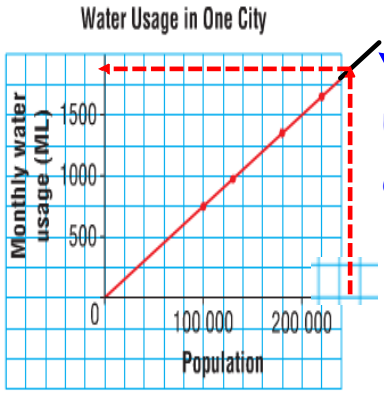


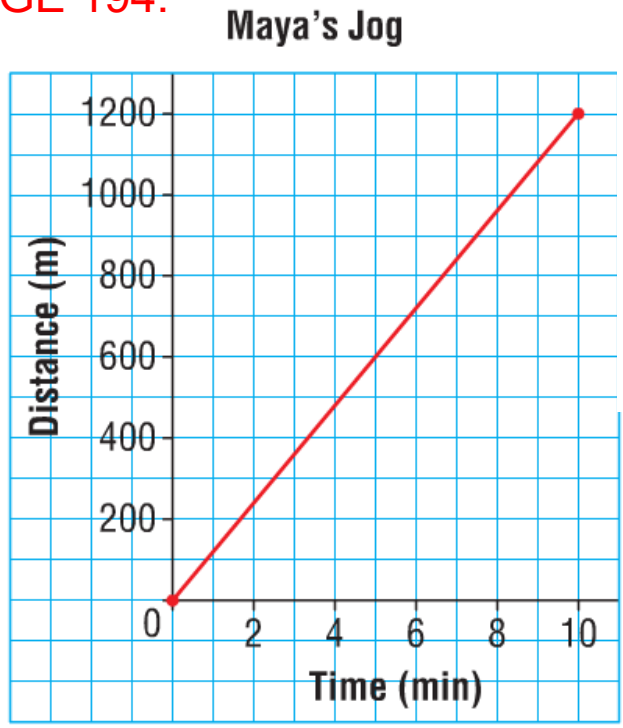
Use a ruler to extend the line.

Extrapolation: ***Estimate values that lie outside the given data points.***

WHAT ASSUMPTIONS ARE WE MAKING HERE???

We are assuming that the population and the associated water usage continue to increase at the same rate.

PAGE 194:



Use the graph.

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

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

c) What assumption did you make?

Use the graph.

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c) What assumption did you make?

Answers:

a) It will take Maya about 16.7 minutes to jog 2000m.

b) Maya will jog about 1690m in 14 min.

c) I assume Maya will continue to jog at the same average speed.

CONCEPT REINFORCEMENT:

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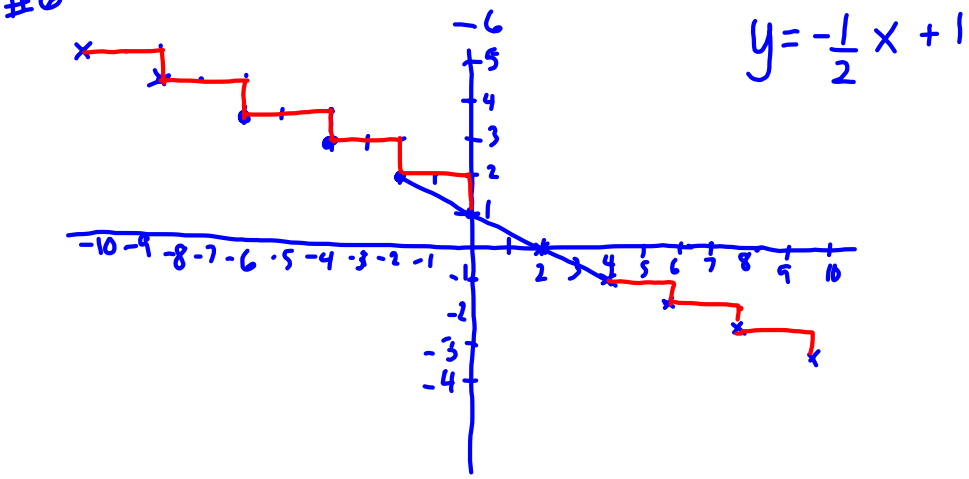
PAGE 196: #4 TO #7

PAGE 197: #8 TO #11

PAGE 198: #13 & #15

#6



TEST PREPARATION

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PAGE 200: "Study Guide"

PAGES 201 / 202 / 203: "Review"

- they are ALL good practice questions

PAGE 204: "Practice Test"

- again, ALL good practice questions