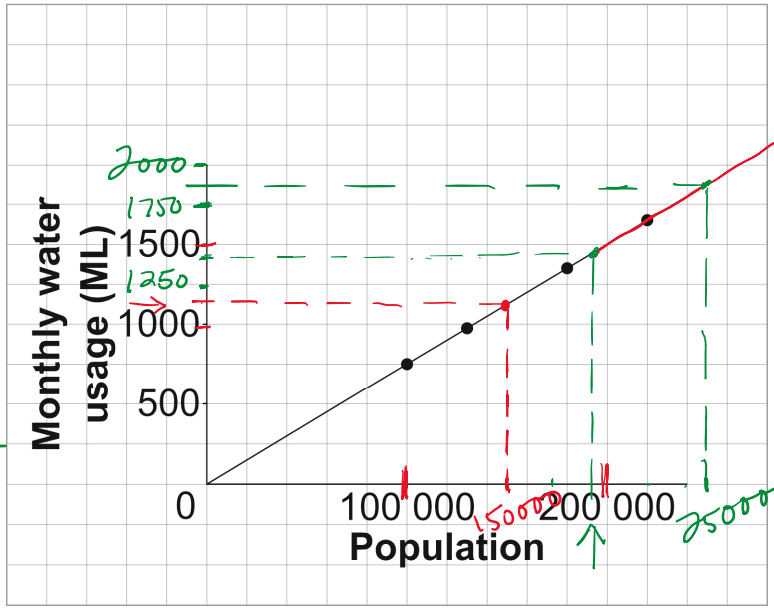
Math 9 Notes Name: _____

3.5 - Estimating with Interpolation & Extrapolation

Use interpolation and extrapolation to estimate the values on a graph.

Water Usage in One City



extend the line to extrapolate

interpolation

≈ 1125 mL

If population of 150 000, then monthly water usage = ≈ 1100 – 1200 mL

If monthly water usage = 1400 ML, then population = ≈ 190 000 PEOPLE

extrapolation

If population = 250 000, then monthly water usage = ≈ 1800 – 1900 mL

Define:

Interpolation: FINDING MISSING VALUES IN BETWEEN GIVEN POINTS

Extrapolation: EXTEND GRAPH TO FIND MISSING VALUES BEYOND GIVEN POINTS

Example 1:

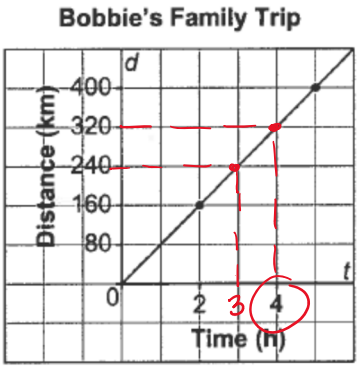
The graph shows the distance travelled by Bobbie's family on a trip from Burnaby to Penticton.

a) How long did it take his family to travel 320 km?

4 Hours

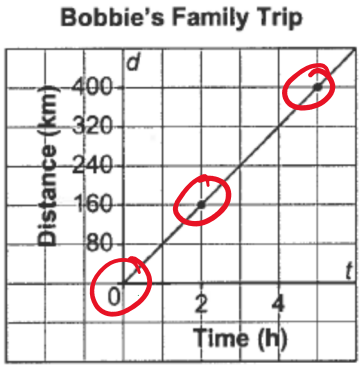
b) How far did they travel after 3 hours?

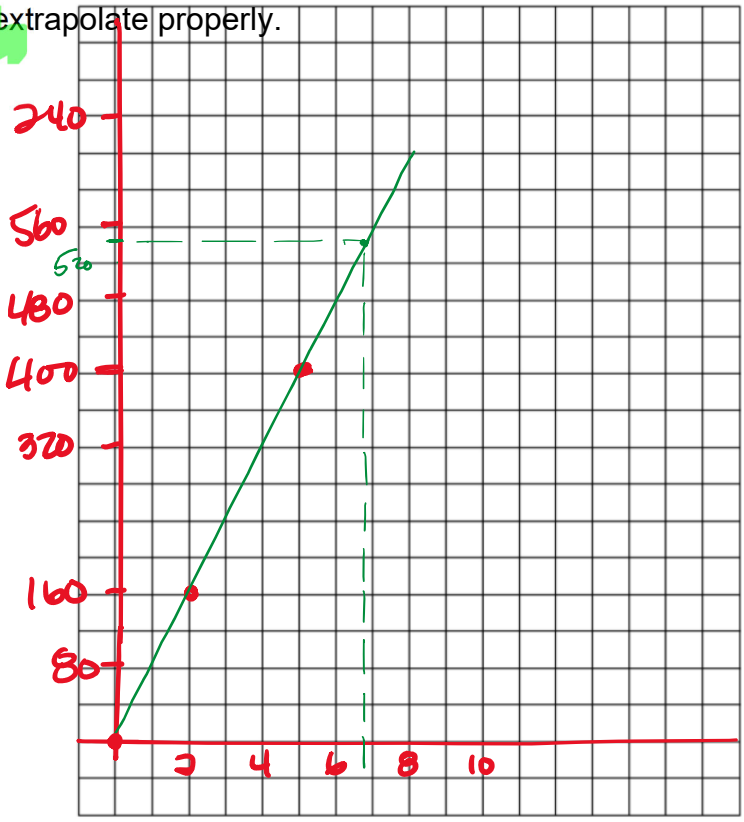
240 km



c) If the family continued through Penticton to Enderby, a total of 550 km, use the graph to estimate how long it would take.

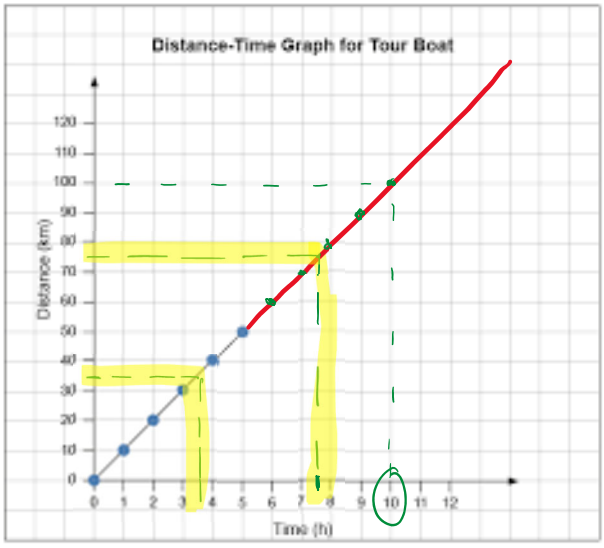
NOTE: You may need to redraw the graph to extrapolate properly.





6.8 - 6.9 hours
APPROXIMATELY

Example 2: The graph shows the distance travelled by a tour boat over 5 hours.



a) Approximately how long will it take to travel 35 km?

INTERPOLATION 3.5 h

b) Predict how far the boat will travel in 7.5 hours.

EXTRAPOLATION 75 km

c) Predict how long it will take the boat to travel 100 km.

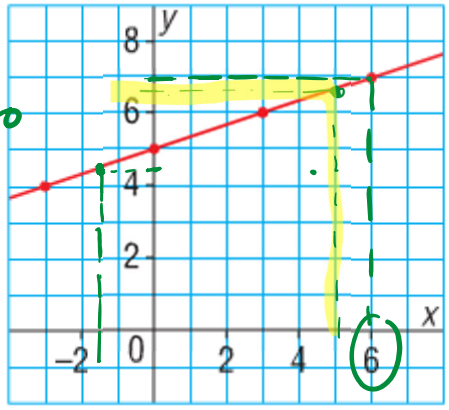
EXTRAPOLATION 10 h.

Example 3: Use this graph to answer the following questions:

a) Determine the value of y when x = 5 ≈ 6.7-6.8

b) Determine the value of x when y = 7 6

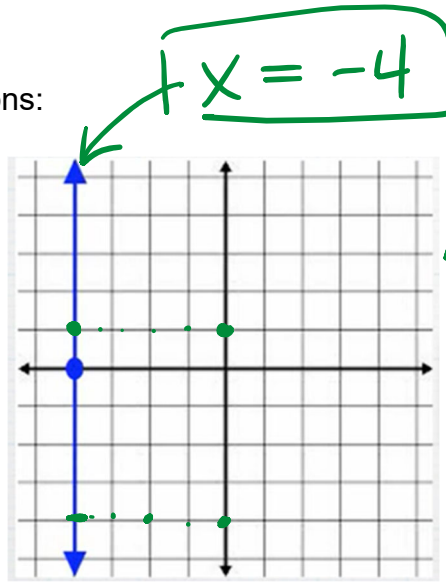
c) Determine the value of x when y = 4.5 ≈ -1.5 to -1.6



Example 4: Use this graph to answer the following questions:

a) Determine the value of x when y = 1 -4

b) Determine the value of x when y = -4 -4



EXERCISES 3.5 IN WORKBOOK

p. _____ #2-4 for novice/apprentice or #2-5 for experts