MPM1D
Jensen

Chapter 2 Review

Section 1: Hypotheses and Sources of Data

1. Write a hypothesis about the relationship between each pair of variables. Then, state the opposite of each hypothesis.

a) temperature outside and the amount of water used by a city

- **hypothesis:**
- **opposite:**

b) a person's height and their mark in mathematics

- **hypothesis:**
- **opposite:**

c) number of sports people play and their level of fitness

- **hypothesis:**
- **opposite:**

d) temperature and the number of people outdoors

- **hypothesis:**
- **opposite:**

2. State whether the following examples are primary or secondary data: (1 marks each)

a.) _____: Joaquim used data from Environment Canada to find the mean number of hours of sunshine each month last year

b.) _____: Tran asked the first 50 people in line for tickets which movie they planned to see.

c.) _____: Bozena used archived newspaper advertisements to find out how the price of milk has changed.

d) _____: Janet called 12 grocery stores to see which stores carry a certain brand of cereal she likes.

e) _____: Don used data from the Bank of Canada to find out how the rate of inflation changed last year.

f) _____: Carly measured and recorded the high and low temperatures each day for one month.

Section 2: Sampling Principles

3. Identify the population in each situation:

a) Parking for students at urban high schools in Canada:

b) Vet bills for older cats are higher than for young cats:

c) The average grade 9 science mark on the report cards this term at King's was 78%:

d) The Ontario government wants to find out the incomes of people who camp in provincial parks:

4. Identify the sampling technique used in each situation (non-random, simple random, systematic random, stratified random):

a) The principal asks five randomly selected students from each home class how they feel about a new school policy.

b) A polling firm uses a random number system to select households. A member of each household selected is asked whether they plan to take a vacation this year.

c) To determine who has to present first, a teacher puts all of the students names in the class on a piece of paper and then mixes them up in a hat. The teacher then draws a random name.

d) Mr. Jensen wants to know what the most popular band is, so he asks only his best friends.

5. You want to survey students' opinions about the extracurricular activities at your school.

a) What is the population?

b) Describe how you could use a stratified random sample for your survey:

c) Describe how you could use a systematic random sample for your survey:

6. An airline wants to determine how its passengers feel about paying extra for in-flight meals.

a) Identify the population.

b) Describe how the airline could use a systematic random sample for its survey.

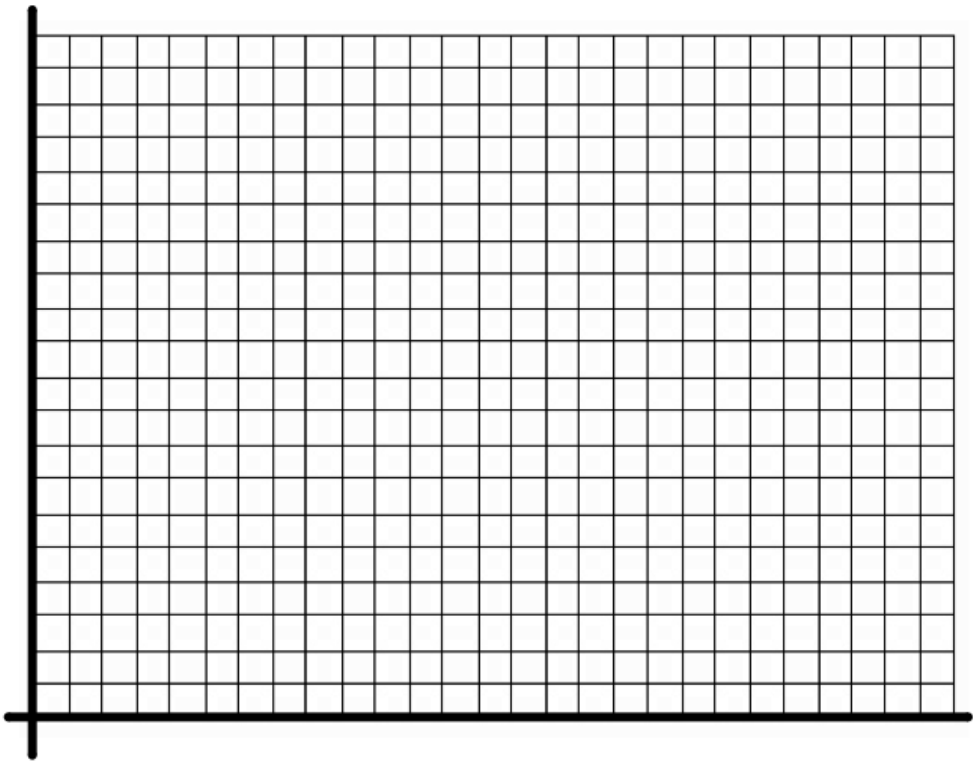
Section 3: Scatter Plots and Trends in Data

7. Circle the dependent variable in each pair:

a)	blood pressure	and	physical fitness
b)	income	and	level of education
c)	load in an airplane	and	length of runway needed for takeoff

8. The table compares the age of a tree and the diameter of the trunk.

Age	3	5	6	4	12	8	9	4
Diameter (cm)	9	11	10	9	11	14	13	8



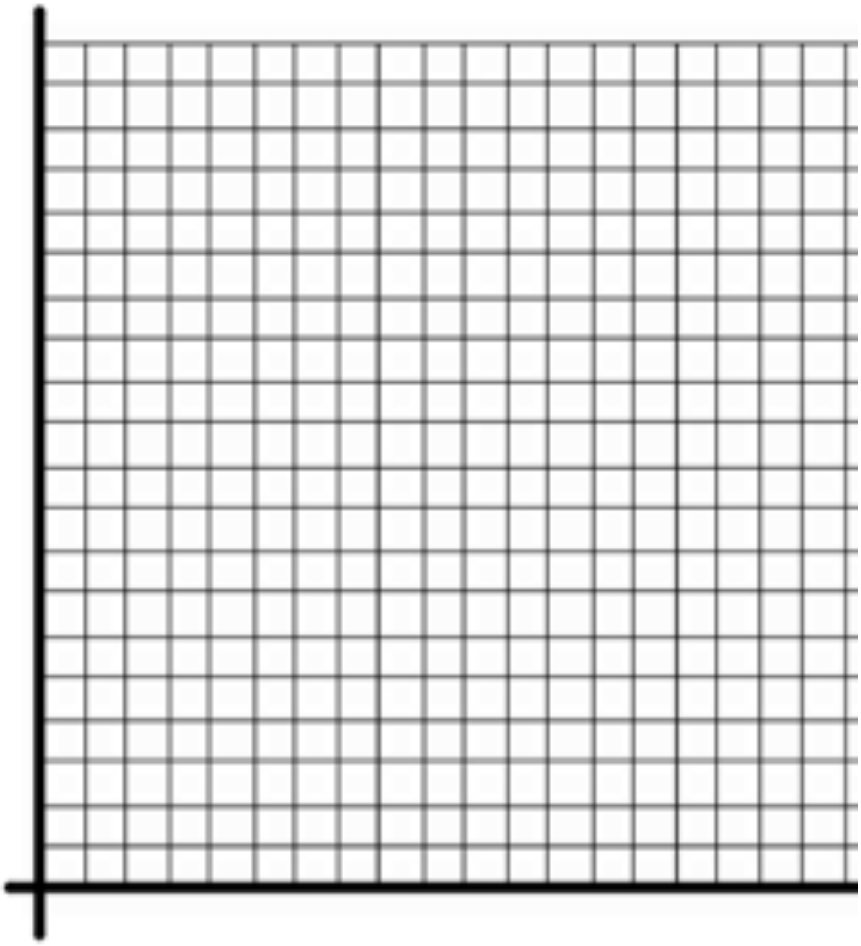
a) Make a scatter plot of the data. Make sure to label the axes, title the graph, and choose an appropriate scale

b) Draw a line or curve of best fit

c) Describe the relationship between the two variables. Make sure to mention if it is linear or non-linear.

9. The table shows the profits of a small manufacturing company from 1955 to 2005.

Year	Profits ($1000s)
1955	48
1965	62
1975	87
1985	110
1995	117
2005	131



a) Make a scatter plot of the data. Make sure to label the axes, title the graph, and choose an appropriate scale

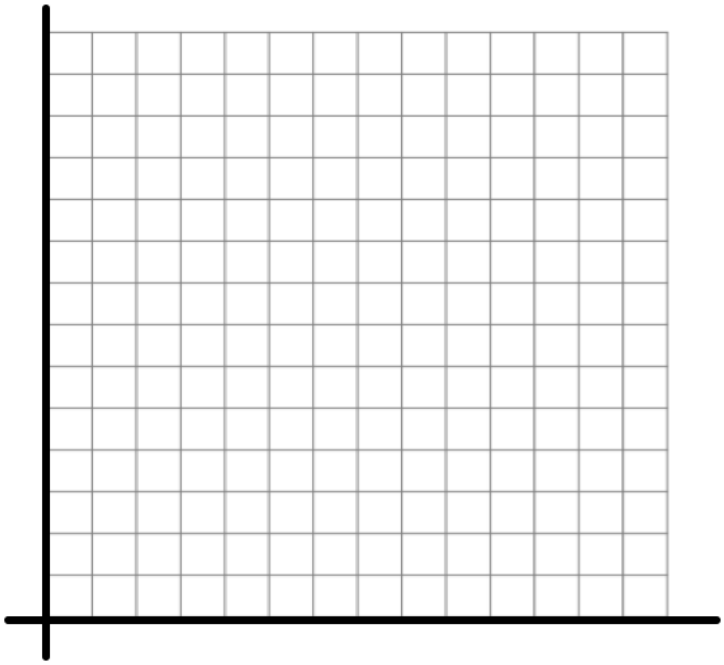
b) Draw a line or curve of best fit

c) Describe the relationship between the two variables. Make sure to mention if it is linear or non-linear.

d) Estimate the company's profits in 1980. Is this interpolation or extrapolation?

10. After landing on Mars, a spacecraft shoots out a probe to take measurements away from any possible contamination at the landing site. This table shows the probe's height during the first 4 s of its flight.

Time (s)	Height (m)
0	1.0
0.5	5.5
1.0	9.2
1.5	11.8
2.0	13.6
2.5	21.4
3.0	14.4
3.5	13.3
4.0	11.4



a) Make a scatter plot of the data. Label your graph.

b) Describe the relationship between time and the height of the probe.

c) Identify any outliers. What could cause such outliers?

d) Draw a line or a curve of best fit, excluding any outliers.

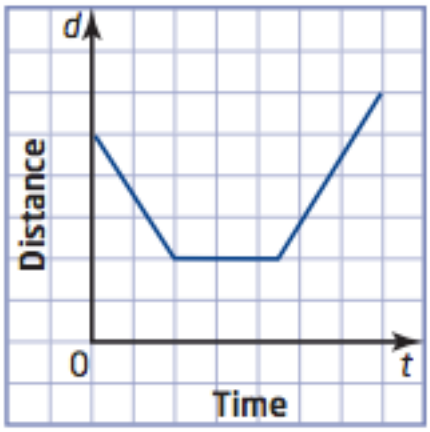
e) Estimate the probe's height after 5 s. Is this extrapolation or interpolation?

11. Describe a situation that corresponds to each distance-time graph:

a)

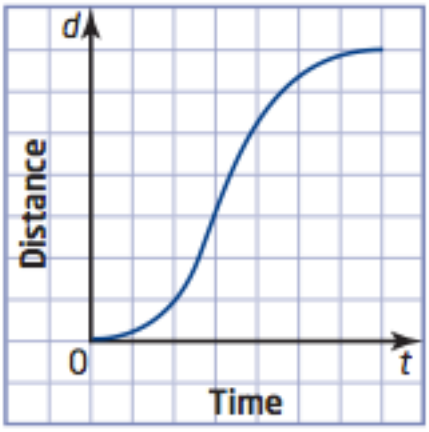
Situation:

b)



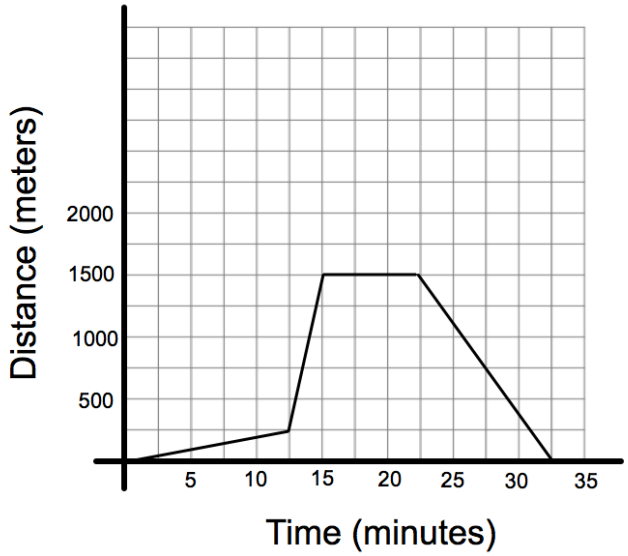
Situation:

c)



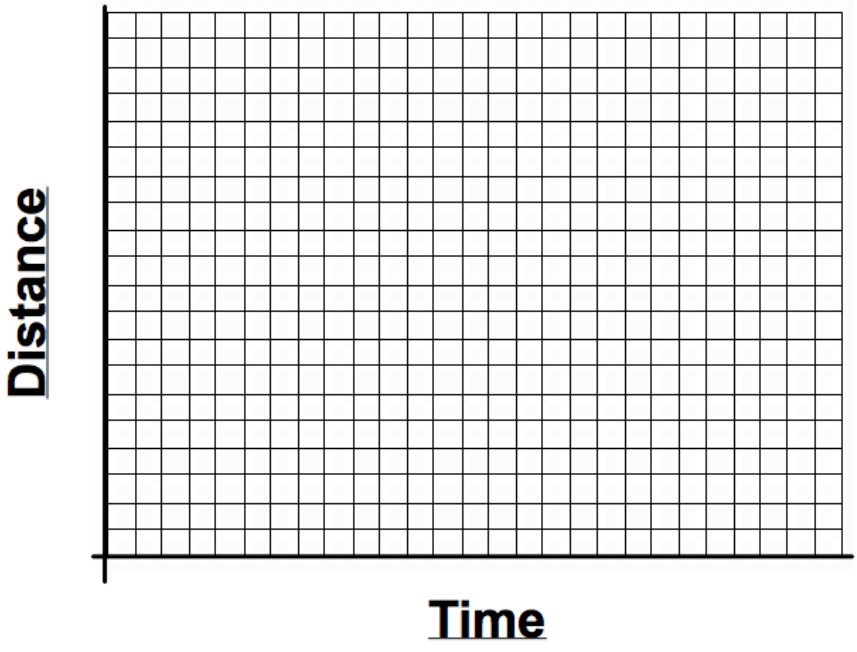
Situation:

12. Write a story that could be represented by the graph (each section of the graph must be explained). Also, make sure to include the how long the trip took, and the distance travelled



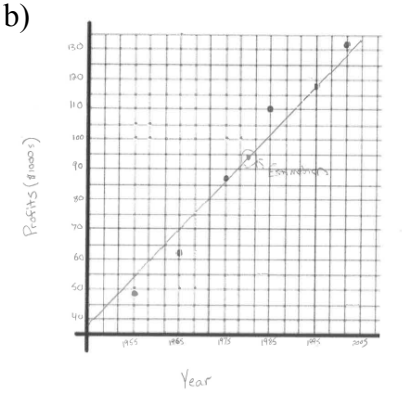
13. Draw a distance time graph for the following situation:

A student leaves home, walking at a steady pace. He slows down, then stops for a few seconds to mail a letter. He turns around and runs home at a constant speed.

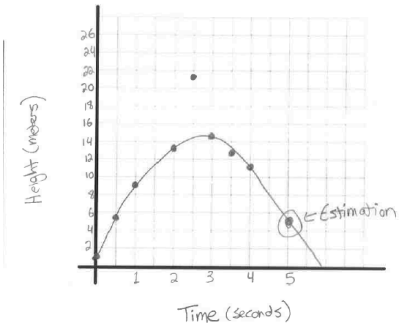


Answers:

1) answers may vary
2) a) secondary b) primary c) secondary d) primary e) secondary f) primary
3) a) all students who attend urban high schools in Canada
b) all vets
c) all grade 9 science students at King's
d) all people who camp in provincial parks
4) a) stratified random b) simple random c) simple random d) non-random
5) a) all students at King's b) and c) answers may vary
6) a) all passengers on that airline b) answers may vary
7) a) blood pressure b) income c) length of runway needed for takeoff
8)a) and b) see solutions page c) non-linear, diameter increases until age 8 then it decreases
9) a) and b)



c) linear, strong positive, as year increases, profit increases d) $9400, interpolation
10) a)



b) non-linear, height increases for 3 seconds then begins to decrease c) 2.5 s
d) see graph e) 5 meters, extrapolation
11) a) away at a slow steady pace; then away at a fast steady pace
b) towards at a steady pace; then no movement; then away at a steady pace
c) acceleration away followed by a deceleration away
12) answers may vary – away at a slow steady pace, then away at a fast steady pace, then no movement, then towards at a steady pace. The trip took 32.5 minutes to cover 3 km.
13)