

Northview Collegiate

Unit 3 Test

Course Code: MDM4U

Name:

Date:



K/U:	T/I:	A:	C:
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K/U

1.

A botanist is studying the effects of acidity on rate of growth. She grows one group of plants using water with neutral pH. She grows each other group using water with increasingly acidic pH levels.

- Which are the control and which are the experimental groups?
- Why do you think groups of plants were used rather than one single plant for each pH level?

2.

A summer camp activity involves measuring the distance travelled by 50 turtles in 15 min. The table shows the results.

Distance (m)	Frequency
0–5	1
5–10	0
10–15	6
15–20	12
20–25	15
25–30	5
30–35	7
35–40	1
40–45	3

- Determine the median, range, first and third quartiles, and interquartile range. Make a box and whisker plot of the data.
- Describe the data in each zone of the plot.
- Identify any outliers, if they exist.

T/I

2.

In each case, identify the type of sample.

- a) You want to find out if your town is in favour of starting a composting pickup service. You ask everyone on your street.
- b) A university is polling its students. It selects 200 students at random in the same proportions as the enrollment in each department.
- c) There are 139 swim clubs in Ontario. Swim Ontario conducts a survey to vote on its new logo. The organization randomly selects 10 swim clubs and surveys every member in each of those clubs.
- d) A coach puts the names of all the basketball players into a hat and draws one name for a free basketball.
- e) A questionnaire is sent to every ninth person on an alphabetical list of a store's credit card customers. The first person chosen from the list is picked randomly.
- f) The student council invites all students to provide ideas for activities.
- g) A marketing firm wants to collect information on certain products in a city of 800 000 people. The researchers randomly select 10 neighbourhoods. In each neighbourhood they randomly select five streets, and on each street they randomly select 10 households.

A.

Before heading on vacation to Mexico, you observe the actual high temperatures for seven days. The table shows the temperatures.

Day	Temperature (°C)
1	27
2	29
3	32
4	29
5	45
6	29
7	31

- Determine the mean, median, and mode of the temperatures.
- The weather report predicts that based on the previous seven-day forecast, the temperature on the day of your arrival should be 36 °C. Use the measures of central tendency in part a) to determine whether the weather report is accurate.
- Is there an outlier in the data? How does it affect the measures of central tendency?
- Which measure of central tendency would best represent the temperatures in this Mexican location? Explain.

C.

Identify the type of bias that may occur in the following situations.

- a) A survey question asks, "How many words per minute can you read?"
- b) A survey is sent to parents of school-age children that asks whether bus safety lanes should be installed.
- c) A phone company surveys its customers via text message about which services people like the best.
- d) A survey asks, "Now that the city is in debt, do you think the current mayor will win the next election?"