

Term: 2022

Name: \_\_\_\_\_

Instructor: Patricia Wrean

**MATH 156**  
**Practice Test 4B**

**Total =  $\overline{25}$**

- All of the work on this test must be your own.
- You may use a scientific calculator. You may not use a calculator with graphing capability or a smartphone app.

**GOOD LUCK!**

1. (5 points) In a statistics class, volunteers were asked how many hours of video games they played every week and then measured their reaction times in seconds, rounded to the nearest one hundredth of a second. (Reaction time is the time it takes your body to respond to something.) Some of the results are shown in the table below.

hours video games	reaction time
0	0.28
2	0.22
5	0.26
24	0.19

For the following questions, circle the best answer or fill in the blank.

- (a) This data is
- (i) univariate
  - (ii) bivariate
  - (iii) multivariate
- (b) Name a variable being measured. \_\_\_\_\_
- (c) For your answer to part (b), this variable is
- (i) qualitative
  - (ii) quantitative and discrete
  - (iii) quantitative and continuous
- (d) The sample is
- (i) a volunteer
  - (ii) the hours of video games and reaction time of a volunteer
  - (iii) the hours of video games and reaction time of all volunteers
  - (iv) the hours of video games and reaction time of all statistics students in the class
2. (2 points) For each issue of the Nexus student newspaper, newspaper writers ask five randomly chosen students a question about a current topic, and report their responses. Do you think that this will give a representative sample of Camosun students? Briefly explain.

3. (7 points) A small courier company employs a manager at \$35 a hour, an IT specialist at \$40 per hour, eight warehouse workers at \$20 per hour, and two drivers at \$22 a hour.

(a) Calculate the following.

(i) mean: \_\_\_\_\_

(ii) median: \_\_\_\_\_

(iii) range: \_\_\_\_\_

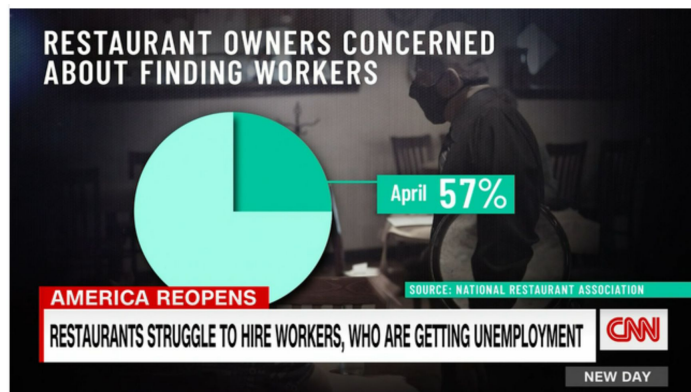
(b) How many employees earn more than the mean wage?

(c) Which measure of centre best describes a typical wage at this company? Explain briefly.

(d) The standard deviation of all of these wages is \$6.5 per hour. If everyone at the company gets a raise of \$2 per hour, what will the new standard deviation be?

4. (2 points) The following graph was showed by CNN regarding the current hiring crisis. The smaller pie slice, representing the percentage of restaurant owners concerned about finding workers, is labeled as 57%.

There is one main reason that this graph is badly designed. Give that reason.



5. (4 points) A sports researcher is studying the resting heart rate for current NHL hockey players. For the following situations, identify the sampling plan used to pick a sample of these hockey players.

(a) All of the hockey players are sorted into groups based on the position that they play (center, left wing, goalie, etc.), and then a random selection of players from each group are measured.

\_\_\_\_\_

(b) All hockey players currently playing in the NHL are put on a list, and then the 3rd player is selected and then every 15th player after that.

\_\_\_\_\_

6. (2 points) State whether the following study is experimental or observational by circling the correct choice.

Civil engineers examined the statistics for the number of car accidents at a certain intersection in Victoria that used stop signs. They then turned the intersection into a roundabout and examined the statistics for the number of car accidents at that intersection afterwards.

Expt / Observ

7. (3 points) A survey of a number of the leading brands of cereal shows that the content of potassium per serving is unimodal and symmetrical, with a mean of 92 milligrams and a standard deviation of 4 milligrams.

(a) Find the interval in which roughly 68% of the measurements will fall. Show your work.

from \_\_\_\_\_ to \_\_\_\_\_

(b) If the potassium content was found to be bimodal instead, would the interval that you found in part (a) still be valid? Yes / No