



**GRADE 12 ESSENTIAL
UNIT C – STATISTICS
WORD PROBLEMS AND REVIEW**

Name: _____

1. Summer Temperature. Daily high temperatures of 26° , 28° , 31° , 26° , and 22° were recorded for the first five days of July 2016.

- a. Determine the Mean daily high temperature for the first five days of that July.

- b. Determine the Median daily high temperature.

- c. State the Range of daily high temperatures.

2. Test scores. To get an **A** in English, Dakota must have a mean of *at least 90%* on five tests. His scores thus far are **83%**, **93%**, **88%**, and **91%** on the first four tests. How many points must Dakota have on the final fifth test to receive an **A**? (*Hint*: First find the total number of points you need to get an **A**; a little algebra or working backwards!)



3. Travel. Brandon is a salesperson who drove daily distances of 402, 239, 155, 254, and 480 km (km) on his five-day sales trip.

- Calculate the Sum total (Σ) of all the daily distances driven.
- Calculate the Mean daily distance driven, \bar{x} .
- Calculate the mean daily distance multiplied by the number of days.
- Explain why a. and c. are the same.
- Determine the Median, \tilde{x} , of the daily distances driven.
- Explain why the Mean and the Median are not even close to the same.
- State the Range of daily distances did Brandon drive.
- Brandon's boss wants to prepare budgets based on the days his sales people spend on the road travelling, should he use the **mean** or the **median** of the daily distances? Explain.





4. Vehicle Fuel Consumption. You *sampled* (selected and recorded) the highway fuel consumption ratings for seven cars at a car dealer and found they were 10, 12, 11, 11, 8, 10, and 14 litres per 100 km (L/100 km).

- a. Determine the mean fuel consumption rating of the sample of cars you selected.
- b. if you were to test drive each car for 100 km, calculate how much fuel would you use total driving all seven cars.

5. Test scores. To pass biology, Debbie must have a **mean** of at least **70%** on six quizzes. [Note: The pass mark in many post-secondary schools is 70%!] So far, her scores have been **65, 78, 72, 66,** and **71**. How many points must Debbie have on the final quiz to pass biology?



6. Test scores. Terry had scores of **87, 82, 60, 68,** and **84** on five tests. Brian had scores of **92, 83, 89, 94,** and **52** on the same five tests.

a. Who had the higher **mean** score *and* by how much?

b. The teacher announces that he is going to **trim** the scores to calculate a trimmed mean. To do this trim the teacher is going to knock off the lowest score from each student and then calculate the mean for each student (I do that as well with your final marks) . Determine the new '**trimmed**' means for Terry and Brian?

c. The teacher announces instead that he is not going to count the lower scores or the higher scores of each student (from the original marks). That is, teacher is going to trim off all the highest and the all the lowest scores and just go for the score in the middle. Calculate this score for both Terry and Brian.

d. what is another name for a score that is calculated by trimming off all the higher and lower scores so that you just use the score(s) in the middle?



***Note:** *Normally* trimmed means are trimmed equally from both ends by some percentage of the number of values; some of the lower *and* higher ends of the range are trimmed off*

7. Energy use for the month of March, in kilowatt-hours (kWh), was accurately recorded by four families and summarized below:

Family→	Wong	McCarthy	Fontaine	Moneyas
Electric Stove	97	115	80	60
Electric Heat	1200	1086	1103	675
Electric Water Heater	407	586	368	200
Refrigerator	127	154	98	60
Lights	75	99	108	45
Plasma TV	39	45	21	20
Total kWh Consumed	1945	2085	1778	1060

a. Electric Heating.

Determine the mean number of kilowatt-hours (KwH) used by a family for **heating** their homes.

Electricity costs \$0.12 per kilowatt-hour (KwH). The local councillor uses this small selection of electric consumption data above to complain that half his families have a bill of more than \$150 to heat their homes this month. Determine if he is fibbing by calculating the median electrical heating consumption of the families.



Note that any mean, median, or mode calculation has to fall within the range of the data

b. Total Electricity Consumption.

- (1) What is the mean amount of kilowatt-hours used in March by the surveyed families?
- (2) Statistics are useful to make comparisons, speculate why the Moneyas family have such a low electric bill.

8. In a certain math class, you take four tests and the final exam , which counts as two tests (the final exam has a '*weight factor*' of twice the test). Your grade is the average of the four tests and the exam. At the end of the course, you compute both the mean and the median

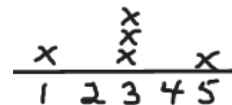
a. You want to convince the teacher to use the mean to compute your average. Write a note to your teacher explaining why this is a better choice. Choose numbers that make a convincing argument.

b. You want to convince the teacher to use a **median** to compute your average. Write a note to your teacher explaining why this is a better choice. Choose numbers that make a convincing argument.



9. Create a set of five numbers such that the mean, the median, and the mode are all the same. *Example: {1, 3, 3, 3, 5} have a mean, a median and a mode of 3.*

[Notice how I really believe in sketches!]



10. Create any set of five numbers such that it has a mean of 12.

[I suggest you use the mean formula]

11. Create any set of five numbers such that the mean is greater than the median.

12. Create any set of five numbers such that the mean is less than the median.