MTH-1102

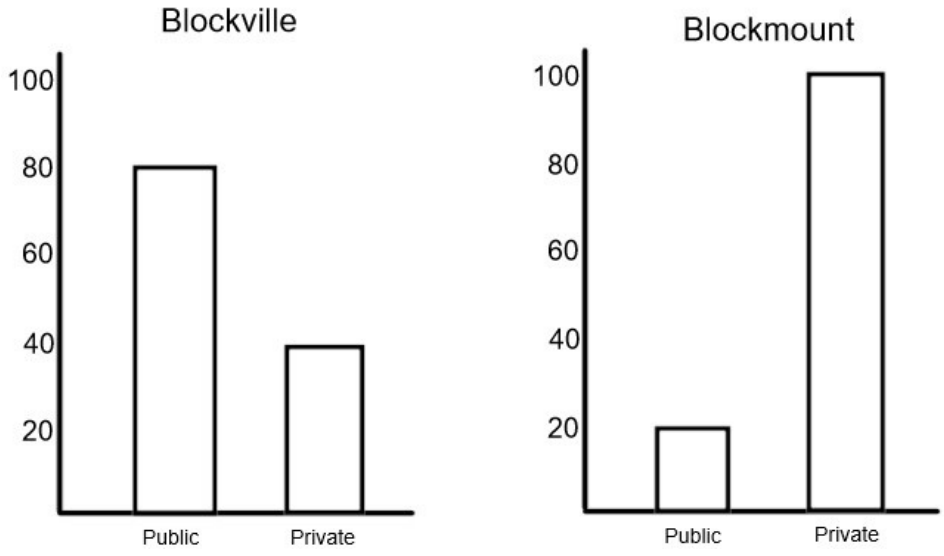
Pretest DC

1) (6 marks) Below are some History grades

72%	73%
56%	67%
82%	61%
71%	69%
74%	81%
65%	67%
66%	67%
52%	48%

a) Find the minimum
b) Find the maximum
c) Find the range
d) Find the mean
e) Find the mode
f) Is this data discrete quantitative, continuous quantitative or qualitative?

2) (4 marks) A survey is done to see how many households in two adjacent towns choose to send their kids to private school or public school. The results are shown in the following graphs:



a) What percentage of people surveyed choose private school? Show your calculations.
b) What percentage of Blockville residents choose public school? Show your calculations.

3) (4 marks) I am making an investigation to find out why the roof collapsed in a grocery store. A large sign had been installed on the roof and this may have contributed to the damage. I hire several engineers and ask them to determine several things by studying the wreckage. I ask them to find me the maximum weight in kilograms a square meter of roof could safely hold. I ask them to break down the roofing materials that were used in construction and in repairs and list them for me (such as tar, gravel, sand).

a) Which of these values will be qualitative and which will be quantitative?
b) Is this a census, a study or a sample survey? Justify.

4) (6 marks) Below is a table that shows which optional courses were chosen by students of different grade levels:

	Sec 3	Sec 4	Sec 5
Geography	60	140	60
Biology	160	80	40
Economics	10	20	120

a) What percentage of Geography students were not in Sec 4?
b) What percentage of students were in Sec 5 and chose Economics?

5) (7 marks) Explain each of the following, using examples:

a) The difference between an experimental probability and a theoretical probability.
b) The difference between dependent and independent events.
c) The difference between a certain event, an impossible event and a probable event.
d) The difference between random, stratified and systematic sampling.

6) (6 marks) Describe the forms of bias in the following situations:

During a national election, but only in one state, ballots where the choice was incompletely marked were discarded. This happened in big cities only, and not elsewhere in the state. A few years later, during a referendum in a province, ballots where the choice was incompletely marked were discarded. This happened only in neighbourhoods which had a high percentage of ethnic minorities.

7) (7 marks) An overpass collapsed and several people were killed or injured. The government wants to find out why this tragedy happened. Is it best to use a census, a study or a sample survey?

8) (20 marks) Player A and Player B obtained the following scores in a penalty-kicking competition:

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
A	16	8	24	7	20	6	20
B	12	13	15	12	17	19	20

Make an appropriate graph to illustrate this situation and draw three conclusions from the graph.

9) (20 marks) Today, the total cost of gas at my local gas station is $1.35/Litre. $0.45 of this is tax. $0.54 is the cost of the oil. $0.36 is the cost of refining, in other words, the cost of converting the oil into gasoline. Make a pie graph of this situation.

10) (10 marks) While reserving their tickets for the end-of-year party, employees were asked to choose a main course between chicken, eggplant, fish or pizza. They also had to choose between root beer and ginger ale, as well as specifying whether they wanted those drinks to be diet or non-diet.

Illustrate this situation with a tree diagram. If I choose a reservation form at random, what is the probability that the person I chose had pizza with diet root beer? Show the ordered triple that goes with this situation, and show your calculation.

11) (10 marks) Now make a second tree diagram from the same situation as the previous question. But this time include the following fractions for these choices:

Chicken	1/4
Eggplant	1/8
Fish	3/8
Pizza	1/4
Root Beer	3/8
Ginger Ale	5/8
Diet	1/2
Non-Diet	1/2

Answer the same question using the new diagram. If I choose a reservation form at random, what is the probability that the person I chose had pizza with diet root beer? Show the ordered triple that goes with this situation, and show your calculation.