MDM4U – Sample Test 3 – PPDAC – October 26, 2023

Name: _____

Knowledge ⚙	Application 🖥	Communication ✎	Thinking 📊	Total	Percent
21	24	19	16	80	%

⚙ Knowledge

1. What does PPDAC stand for? /1

P	P	D	A	C

2. Identify the phase of PPDAC where each of the following occurs. /10

(a) Calculate r		
(b) Collect surveys		
(c) Choose research question		
(d) Decide sampling		
(e) Replicate experiment		

(f) Explain biases		
(g) Create graph		
(h) Write up report		
(i) Find average		
(j) Give out placebo		

3. Read the following description. Answer the following questions about it. /10

NachoNacho® brand corn tortillas are made at a large facility in Brampton that produces 100,000 tortillas per day on two production lines. A government inspector visited the facility on Oct 22, 2019, to determine if they comply with their advertised diameter of 6 inches. Using a random number generator, a computer selected 328 tortillas to test from both production lines. The mean was 6.012 inches, which was acceptable.
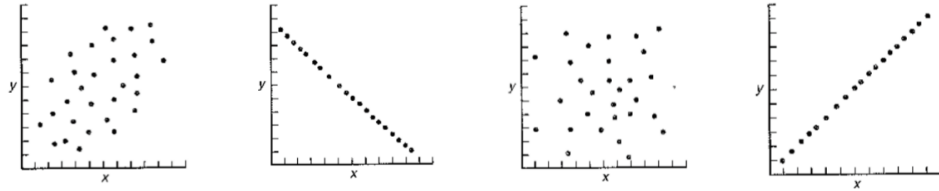
a) Is it Causal or Descriptive?	
b) How much Replication?	
c) Sampling Technique?	
d) Random Assignment?	
e) What is the Research Question?	
f) Identify the variable data was collected about.	
g) Identify the calculation that occurred.	
h) Identify the Problem Unit	
i) Identify the Plan Unit	
j) What are the Biases or Diversity Limitations?	

⌨ Application

4. For each graph, fill in the chart. /8

r Estimate (1, 0.7, 0, -0.7, -1)				
Positive/Negative				
Strength of Relationship				

5. What are the formulas found in the indicated cells of this spreadsheet? /10

	A	B	C	D	E	F	G	H	I	J	K	L
1								Mean	Median	Mode	Smallest	Largest
2	Time	4	2	3	3	5	8	4.167	3.5	3	2	8
3	Cost	7.45	6.56	6.78	7.45	7.84	10.56	7.773	7.45	7.45	6.56	10.56
4												
5							X	Y	Slope	Yint	r	r^2
6							Time	Cost	0.65504	5.044	0.96882	0.9386
7							Cost	Time	1.43291	-6.97	0.96882	0.9386

H2 _____ I6 _____

I2 _____ I7 _____

J2 _____ J6 _____

K2 _____ K6 _____

L2 _____ L6 _____

6. What 3 things are required to prove causation? /3

7. (a) Calculate the proportion of the variance of Y which cannot be explained by the variance of X if r = 0.5?
Show your work. /3

(b) What two possible r values will mean that 81% of the variance of X depends on the variance of Y?
Show your work.

✎ Communication

8. Write the term indicated in the last column.   /10

   (a)   A company (e.g., Blue Kai) who finds trends in large data sets.

   (b)   r is the _____ co-efficient. [Fill in the blank]

   (c) r^2 is the co-efficient of _____. [Fill in the blank]

   (d)   A pioneer in self-tracking. Worked for Facebook's timeline division.

   (e)   The method of eliminating spuriousness as a possibility.

   (f)   One variable or Two variable: A histogram.

   (g)   Sampling technique used when you post a poll on social media.

   (h)   By observing people, you change their behaviour.

   (i)   When Nike funds a study on the quality of running shoes; A bias.

   (j)   When specific conclusions are expanded to other situations; A bias.

9. A researcher finds the following: ↑ sleep correlates to ↑ test scores. What things could be happening?   /3

10. Define and explain the importance of the term "double blinding".   /2

   ....
   ....
   ....
   ....
   ....

11. Identify 4 distinct errors with this survey. Explain each briefly.   /4
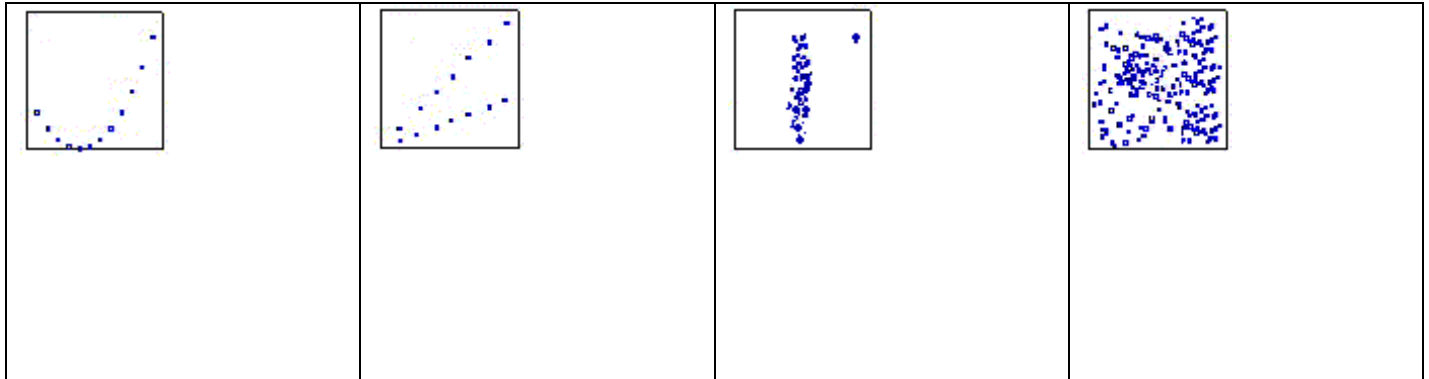
   Community Survey   **Name: _____**

   *Thanks for helping with my MDM4U project about the
   impact of birth order on future family sizes.*
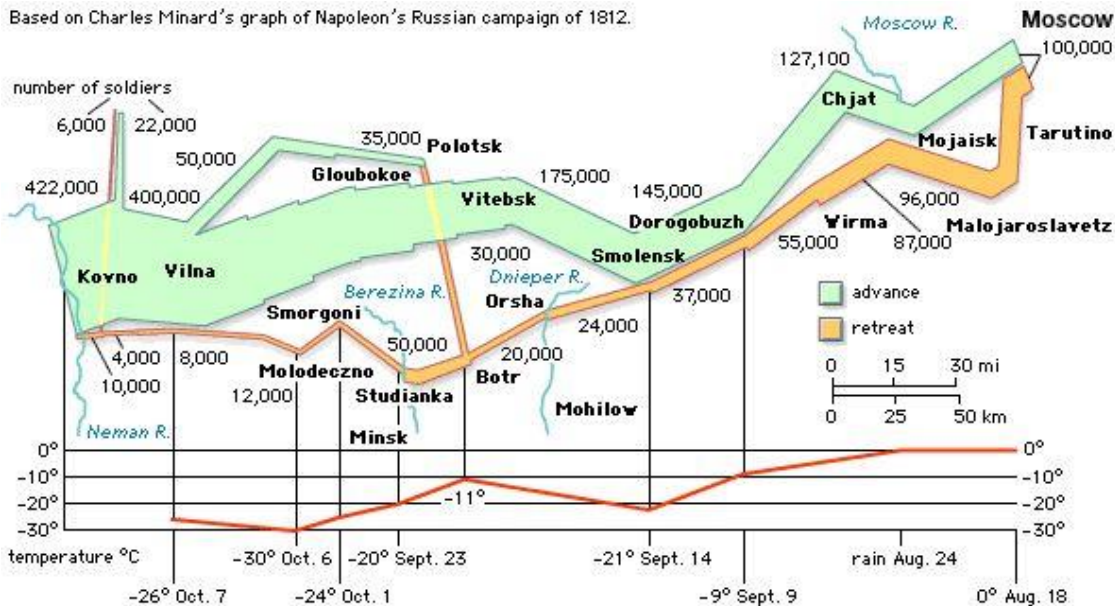
   1. What is your gender? _____
   2. How old are you? _____ years
   3. Where do you live?
        _____ Brampton   _____ Orangeville
   4. What is your current martial status?
        _____ Never Married, single.
        _____ Widowed/Divorced/Seperated
   5. Do you have any children? Do you want any?
      [adopted or natural or spouse's]
        _____ Yes _____ No
   6. What is your birth order?
        _____ I was an "only child"   _____ In the middle
        _____ Youngest of siblings   _____ Adopted

📊 Thinking

12. Why shouldn't you find a line of best fit for any of these sets of data? /4

13. This graph is considered the greatest graph ever created. Not limited to a mere one or two variables, Charles Minard graphed six variables all on one graph. What are they? /6

The 6 variables:

14. Alzheimer's disease results in a loss of cognitive ability beyond what is expected with typical aging. A local newspaper published an article with the following headline: "Study Finds that Smoking Causes Alzheimer's." The article reported that a doctor had reviewed the medical histories from a hospital archive of 21,123 men documenting 23 years. The article also stated that, for those who smoked at least 2 packs of cigarettes a day, the risk of developing Alzheimer's disease was 2.57 times the risk for those who did not smoke.

What are the 3 most important errors in the reporting of this study? Explain briefly. /6