

Name: _____

Date: _____





Choose a question from one of the following options. Write a complete, correct, and well-presented solution to your chosen problem. There are **three tiers of problems** you can choose from, essentially allowing you to choose the **maximum** mark you will be able to get for this project

- Tier 1 (the simpler questions): Maximum mark will be 65%
- Tier 2 (the middle questions): Maximum mark will be 75%
- Tier 3 (the harder questions): Maximum mark will be 100%

Separately, write a journal entry on how you approach problem solving. It can be with respect to math specifically, or to a problem you have dealt with in your life. Make sure to include language we've been using in this chapter.





The solution will be peer marked on **Monday, February 11**. The agreed upon rubric will be provided for you. You will be marked on how well you assess your classmate (by Ms. Langille). Ms. Langille will also be assessing your journal article.

Peer Assessment Rubric





	Emerging 	Developing 	Proficient 	Extending 
Is the reasoning detailed enough for you to understand the solution?				
Is the answer well marked and correct?				
Can you read the question and solution?				
Was the presentation visually appealing?				

Feedback (2 stars and a wish):

Peer Assessment Mark

	Emerging 	Developing 	Proficient 	Extending 
Did you critique (not criticize) the project you were trusted to mark?				
Did you give feedback regarding why you gave them the mark you did?				

Problem Solving Journal Entry

	Emerging 	Developing 	Proficient 	Extending 
Have you used a concrete example to demonstrate your ideas?				
Have you used the language that was introduced in Chapter 1 of this course?				
Have you written at the grade level that is expected of you?				
Was your response thoughtful?				

Tier One (for a maximum mark of 65%)

- Barry, Cheryl, Devon and Eva all go to the same high school. One likes history the best, one likes math the best, one likes computer science the best and one likes english the best.
 - Barry and Devon each lunch with the student who likes computer science.
 - Eva likes history the best.
 Who likes computer science the best?
- Determine the unknown term in the pattern. Explain your reasoning.
2, 5, 9, ____, 20, 27
- Continue the sequence 5, 14, 23, 32, 41, ... by two terms. Explain the pattern and whether your reasoning was inductive or deductive.
- Bob, Kurt and Morrey are football players. One is a quarterback, one is a receiver, and one is a kicker. The kicker, who is the shortest of the three, is not married. Bob, who is Kurt's father-in-law, is taller than the receiver. Who plays which position?
- There are six pails in a row. The first three pails are filled with water. How can you move only one pair to make the following pattern: full pail, empty pail, full pail, empty pail, full pail, empty pail?

**Tier Two** (for a maximum mark of 75%)

- Alexa had a deck of coloured cards. One-fifth of the cards are blue on both sides, and the rest have different colours on each side. Alexa laid out the cards. There were 5 blue cards, 8 yellow and 2 red. When she flipped the cards over, she saw 6 blue cards, 5 red and 4 yellow. How many cards are blue on one side and yellow on the other? Explain your answer.
- Aarsh, Isaac, James and Justin swam in a race. Early in the race, Isaac led Justin by 3m and James led Aarsh by the same amount. Justin was 1m behind James. By the halfway point, James and Isaac had swapped places but were the same distance apart. Justin caught up with Isaac, and Aarsh was running second. Over the last part of the race, Justin swapped places with Aarsh, as Isaac faded badly. Who finished third?
- A taxi is travelling 3 blocks south and 3 blocks east. If the driver does not turn north or west at any point, how many routes may she choose?
- During Sid's vacation, it rained for five days. However, when it rained in the morning, the afternoon was sunny, and every rainy afternoon was preceded by a sunny morning. There were six sunny mornings and nine sunny afternoons. How long was Sid's vacation?
- Fill in the missing numbers, from 1 to 9, so that the sum of the numbers in each row, column and diagonal is 15.

a.

		6
		1
4	3	8

b.

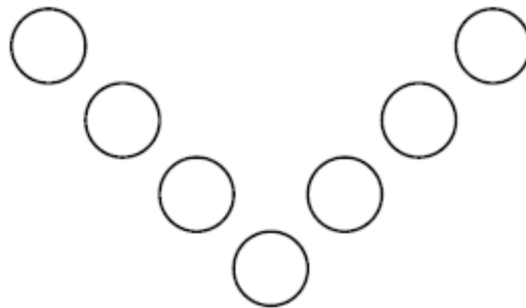
		4
	5	3
		8

Tier Three (for a maximum mark of 100%)

- Use deductive reasoning to show that the sum of two even numbers and an odd number is an odd number.
- A set of nine cards, numbered from 1 to 9 is divided between two bags. The sum of the cards in the red bag is twice the sum of the cards in the white bag. The red bag contains four cards. Which bag contains the number 6? Explain.
- A set of 10 cards, each showing one of the digits from 0 to 9, is divided between five envelopes so that there are two cards in each envelope. The sum of the cards inside each envelope is written on the envelope. A sum of 8 could be made by these pairs of cards:
(8, 0), (7, 1), (6, 2), (5, 3)
 - Explain which of these pairs of cards cannot possibly be in the envelope marked 8.
 - Describe the reasoning you used to solve this problem.



- Place the numbers 50 to 56 in a V-shape, as shown, so the two arms of the V have the same total. How many different solutions are there to this puzzle?



- In this equation, x is an integer. What does the equation prove? Support your answer with a specific example.

$$x + (x + 1) + (x + 2) + (x + 3) + (x + 4) + (x + 5) + (x + 6) = 7x + 21$$