**Section 1: Multiple Choice**- Read each question carefully. Then place the correct answer in the space provided at the end of the section.

1. Which describes the set  in set notation?
2. Which is an example of the empty set?
   1. The set of days with 24 hours.
   2. The set of months with less than 32 days.
   3. The set of weeks with 8 days.
   4. The set of years with less than 13 months.
3. Which two sets are disjoint?
   1. The set of boys and the set of people who like sports.
   2. The set of cats and the set of animals that fly.
   3. The set of dogs and the set of animals that can run.
   4. The set of girls and the set of people who like dancing.
4. Which statement is true?
   1. 
   2. 
   3. 
   4. 
5. Given . What is the complement of?
   1. 
   2. 
   3. 
   4. 
6. Given , which set represents ?
   1. 
   2. 
   3. 
   4. 
7. Given  and , which set represents ?
   1. 
   2. 
   3. 
   4. 
8. What is the value of  if  ,  and ?
   1. 2
   2. 4
   3. 6
   4. 16
9. This Venn diagram represents the students of Gonzaga. B is the set of boys and S is the set of students who are on student council. What does the shaded area of this diagram represent?



* 1. The boys who are not on student council.
  2. The boys who are on student council.
  3. The girls who are not on student council.
  4. The girls who are on student council.

1. A Girl Guide leader has 30 girls in her group. In this group, 16 of them are good runners, 11 of them are good swimmers, 2 of them are good runners and good swimmers and 5 are neither good runners nor good swimmers. Jason drew this Venn diagram to represent this information. In which region is his error?



* 1. i
  2. ii
  3. iii
  4. iv

1. What is the value of  in this Venn diagram?



* 1. 3
  2. 7
  3. 8
  4. 11

Answers for Section 1:

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_ 6. \_\_\_\_\_

7. \_\_\_\_\_ 8. \_\_\_\_\_ 9. \_\_\_\_\_ 10. \_\_\_\_\_ 11. \_\_\_\_\_

Section 2 – Extended Response 23 Marks

Answer each question in the space provided. You MUST show ALL your workings to receive full marks. Correct answers based on incorrect mathematical reasoning will NOT receive full marks.

1. If , what can you conclude about sets *S* and *T*? (1 Mark)

1. The Lettuce Romaine Friends Club, which consists of people from St. John’s who have small vegetable gardens, obtained the following information from its members:

* 80 grew tomatoes
* 69 grew green beans
* 58 grew carrots
* 23 grew all three
* 19 grew carrots and beans but not tomatoes
* 31 grew only tomatoes
* 33 grew tomatoes and beans
* 21 grew neither tomatoes nor carrots nor beans.
  1. Illustrate the given information on a Venn diagram. (4 Marks)



* 1. How many members are in the club? (1 Mark)
  2. How many grew carrots or beans but not tomatoes? (1 Mark)
  3. How many grew tomatoes or beans? (1 Mark)

1. NTV television station sent out questionnaires to determine if viewers would rather see a documentary, an interview show or reruns of a game show. There were 900 responses with the following results:

* 395 were interested in a documentary.
* 595 were interested in an interview show.
* 340 were interested in reruns.
* 65 were interested in all three.
* 175 were interested in documentaries and interview shows but not reruns.
* 190 were interested in interview shows and reruns but not documentaries.
* 120 were interested in none of the three.

Algebraically determine how many are interested in exactly one kind of show? (8 Marks)

