MTH 21 and 21.5 Chapters 2, 4, and 7 sample questions

Chapter 2: sets and counting (2.1 – 2.5)
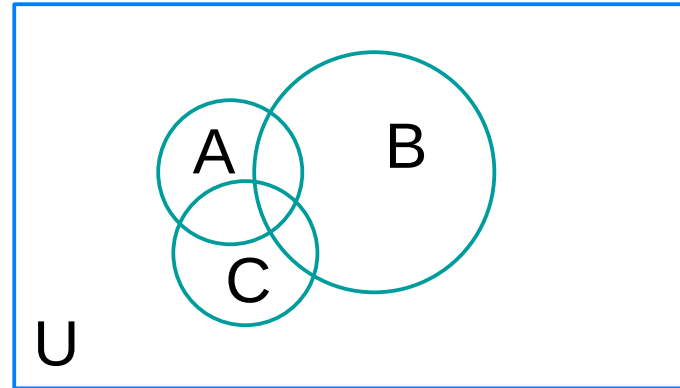Chapter 4: statistics (4.1 – 4.2, percentiles)
Chapter 7: number systems and number theory (7.4 – 7.5)
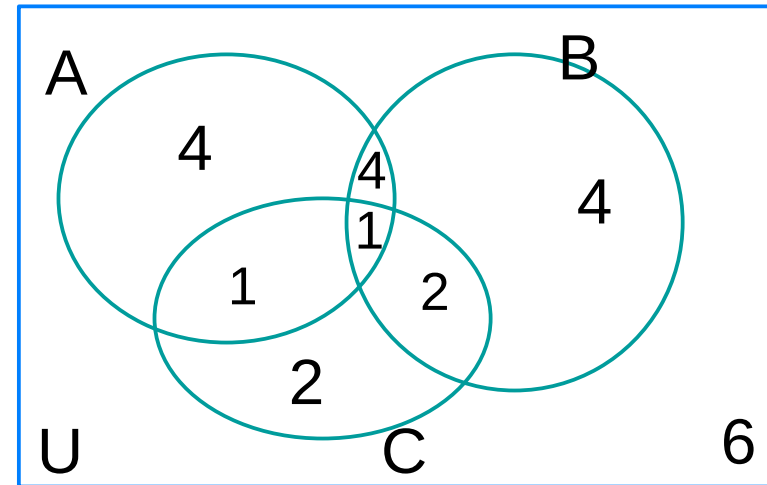
MTH 21 and 21.5 Chapters 2, 4, and 7 sample questions

Problem 1:

given the Venn Diagram of the three sets A, B, and C, shade the area corresponding to A' $\cap$ (B $\cup$ C)

MTH 21 and 21.5 Chapters 2, 4, and 7 sample questions

Problem 2:

Let A = {0, 2, 3, 4, 8}, B = {0, 1, 2, 3}, C = {0, 1, 5, 6, 7, 8}. Find

(a) A ∩ B

(b) (B ∪ C) ∩ A

(c) B ∪ (C ∩ A)

Problem 3:

given the Venn Diagram of the three sets A, B, and C, shade the area corresponding to A, B and C, answer the questions:

a) How many elements are in the set A?

b) How many elements are in B or C?

c) How many elements are in A but not C?

d) How many elements are in A or B or C ?

e) How many elements are in neither A nor B nor C?
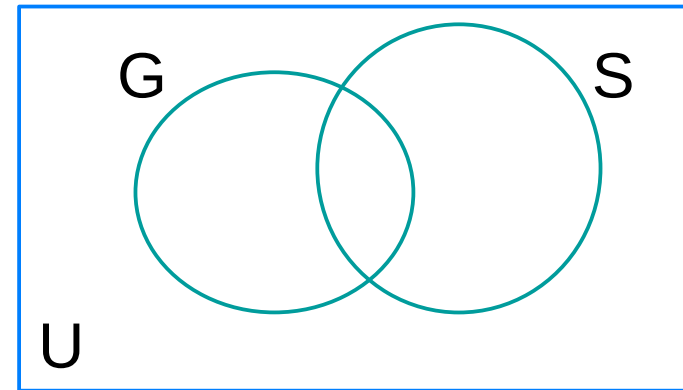
f) How many elements are in U?

$$n(A\cup B)=n(A)+n(B)-n(A\cap B)$$

Problem 4:

There are a total of 72 foreign language students in a high school where they offer Spanish and German. There are 44 Spanish students and 41 German students. How many students take Spanish and German languages at once?

MTH 21 and 21.5 Chapters 2, 4, and 7 sample questions

Problem 5:
Standard automobile license plates in a country display 2 numbers, followed by 2 letters, followed by 3 numbers. How many different standard plates are possible in this system? (Assume lead 0 is not allowed, but repetitions of letters and numbers are allowed.)

Problem 6:
How many three-letter "words" can be made from 8 letters "FGHIJKLM" if repetition of letters

(a) is allowed?

(b) is not allowed?

Problem 7:
In how many ways can 6 books be chosen from a group of 9?

Problem 8:

For a test with 10 questions, the questions are selected from the pool of 18 questions. In how many different ways can the questions in this test be arranged?

(the questions are numbered and the order of questions is important)

Problem 9 – part 1:
Consider the following data set:

25 29 30 47 34 26 46
38 29 40 37 49 51 34

Find the *class width* for a *histogram* with 4 *classes*.

Problem 9 – part 2:
Consider the following data set:

25 29 30 47 34 26 46
38 29 40 37 49 51 34

Fill out the frequency and relative frequency table with 4 classes

interval	frequency	relative frequency

Problem 9 – part 3:

Consider the following data set:

25 29 30 47 34 26 46
38 29 40 37 49 51 34

Use the relative frequency to draw a histogram.

interval	relative frequency

MTH 21 and 21.5 Chapters 2, 4, and 7 sample questions

Problem 10:
For the given data: 10, 12, 14, 19, 18, 14, 18, 24, 15, 18, 14, 15

Find *n*, *median, mode* and *mean*.

Problem 11:
Students in a MTH 21 class received the following scores on Test 1:

98 76 82 89 35 76 90 85 65 69 71 92 87 99

Calculate the 5 number summary of this data:

Min =

Q_1 =

Q_2 =

Q_3 =

Max =

IQR =

Problem 12:

Give the first 5 numbers of *Fibonacci sequence*