

MTH 161

Section 2.3 – 2.5: Venn Diagrams

Directions: Answer each of the following questions with one or more complete sentences. Your answer should include the question as part of the answer sentence. *For example*, if the question is “*What is your name?*” you might give the answer, “*My name is Jennifer Jones.*”

1. For this assignment, the **Universe** = the set of colors of the rainbow.

$$W = \{ \text{Women who have won Nobel Prizes} \}$$

$$A = \{ \text{Americans who have won Nobel Prizes} \}$$

$$B = \{ \text{Winners of the Nobel prize in Chemistry} \}$$

$$C = \{ 0, 1, 2, 3, 4, 5 \}$$

$$D = \{ 0, 2, 4, 6, 8, 10 \}$$

$$E = \{ 0, 4, 8 \}$$

- To be successful with Venn Diagrams, you must have a very good understanding of the difference between a Union and an Intersection. In your own words, what is the difference between the **Intersection** and **Union** of sets?
- Describe the elements of each of the following sets with words. Give your answer in the most simplified, concise wording possible to receive full credit. Don't forget to answer with a complete sentence, including the question in your answer.
 - $W \cup A$
 - $W \cap A$
 - $A \cap B$
- Draw a Venn Diagram for sets C, D and E. You do not have to turn in your Venn Diagram, but you should use it to answer this question. List the elements of each of the following. Don't forget to include the question in your complete statement answer.
 - $C \cup D$
 - $D \cup E$
 - $C \cap D$
- List the elements of each of the following. Don't forget to include the question in your complete statement answer.
 - $D \cap E$
 - $D - E$
 - $(C \cup D) - E$
- At a campus of STLCC, 50 students enrolled. Suppose 23 students needed to take Developmental English and 34 needed to take Developmental Math. Draw five different Venn Diagrams that can all be used to correctly display this data. **HINT:** The difference in each Venn Diagram will be how many students are in the intersection! Think about the maximum and minimum number possible in the intersection.
 - What is the least number of students that could have needed both?
 - What is the greatest number of students that could have needed both?
 - What is the greatest number of students that could have needed neither?