



## Essentials of Formal Logic with Joelle Hodge

### Lesson 32: Chapter 8.5

#### Outline:

##### Chapter 8, Lesson 8.5

- Determining the Validity of Syllogisms
- An Introduction to the Venn Diagramming Method of Establishing Validity
- Points to Remember
  - Venn diagrams are another method for testing the validity of a syllogism.
  - When you use Venn diagrams to test the validity of a syllogism, you use three interlocking circles that help you to examine the relationship between terms in the premises and conclusion of a syllogism.
- A Venn diagram is a great pictorial representation of a syllogism and can establish the validity or invalidity of a syllogism with certainty.
- At first, it may seem to take more effort to use the diagrams to determine validity than it does to use the rules method, but using Venn diagrams can yield a better understanding of the relationship between the two premises of the syllogism.
- Venn diagrams are based on the essential idea of a syllogism, which we have discussed several times already. Remember that when you construct a syllogism, you draw a conclusion from the available premises.
- After you have diagrammed the premises, you inspect the Venn diagram to determine if the conclusion has also been diagrammed. If your syllogism is valid, you will have already diagrammed your conclusion by diagramming the premises because, as we noted previously, in a valid syllogism, the conclusion is implied by, or contained in, the premises. If you find that your conclusion has not been diagrammed in the process of diagramming the premises on the Venn diagram, then you know the syllogism is invalid.
- Let's examine how to diagram syllogisms. We will first examine valid syllogisms, and then we will examine invalid syllogisms. In addition, we will start with syllogisms that contain all universal premises rather than a mixture of particular and universal premises. That is because syllogisms containing all universal premises are a little easier to diagram. Let's begin with a syllogism that we already know to be valid: the AAA-1 syllogism. This is what it looks like in symbolic form:
  - All S is P.
  - All Q is S.
  - Therefore, all Q is P.

- Now that we have diagrammed our premises, let's look at our conclusion: Therefore, all Q is P. You will notice that this is another A proposition. If our syllogism is valid, the area of Q that is not P should all be shaded out, and there should be an X in the overlap section between Q and P.

Figure 3a

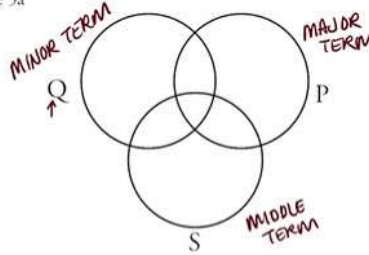


Figure 5b

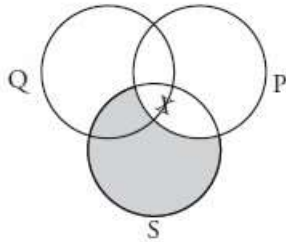
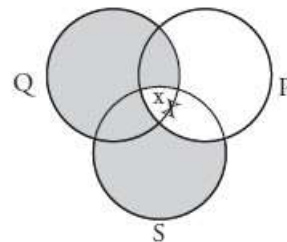


Figure 5c



- You may note that some of the overlap section between Q and P has been shaded out as well. The premises of a syllogism may or may not imply more than what the conclusion implies, which is fine. A syllogism can still be valid even if the premises imply more than the conclusion implies.
- Therefore, the premises of a valid syllogism will often imply more than the conclusion. However, they must at least imply the conclusion. That is, a syllogism is invalid if the premises imply less than what the conclusion implies or, in other words, if its conclusion is not already implied in the premises.