

Section 2.5

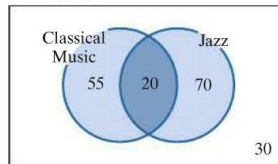
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Venn diagrams can be used to organize information collected in surveys. When interpreting cardinalities in such diagrams, *and* and *but* mean intersection, *or* means union, and *not* means complement.

To solve a survey problem,

1. Define sets and draw a Venn Diagram.
2. Fill in the cardinality of each region, starting with the innermost region and working outward.
3. Use the completed diagram to answer the problem's questions.

Example 1: In a survey on musical tastes, respondents were asked: Do you listen to classical music? Do you listen to jazz? The survey results are summarized in the figure below. Use the diagram to answer the following questions.



- a. How many respondents listened to classical music?
- b. How many respondents listened to jazz?
- c. How many respondents listened to both classical music and jazz?
- d. How many respondents listened to classical music or jazz?
- e. How many respondents listened to classical music but not jazz?
- f. How many respondents listened to jazz but not classical music?
- g. How many respondents listened to neither classical music nor jazz?
- h. How many people were surveyed?

Example 2: In a Gallup poll, 2000 U.S. adults were selected at random and asked to agree or disagree with the following statement:

Job opportunities for women are not equal to those for men.

The results of the survey showed that

1190 people agreed with the statement.

700 women agreed with the statement.