

Set Applications

Math 1001

Quantitative Skills and Reasoning



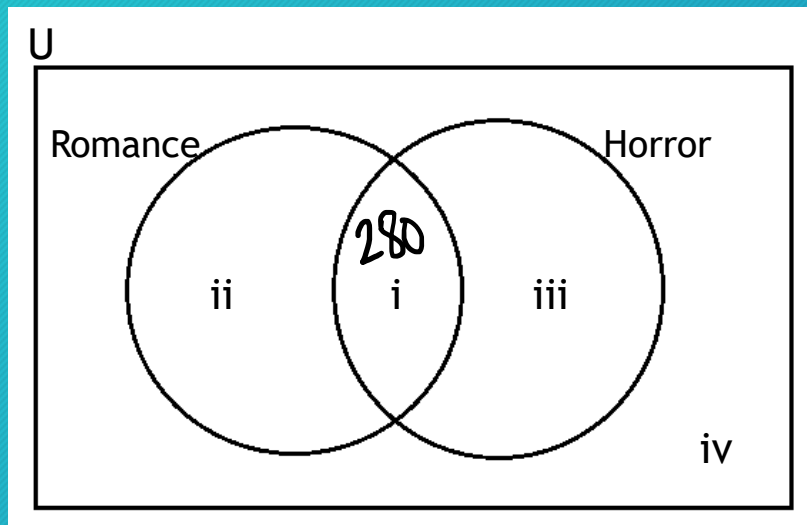
COLUMBUS STATE
UNIVERSITY

A Survey of Preferences

- A movie company is making plans for future movies it wishes to produce.
- The company has done a random survey of 1000 people.
- The results of the survey:
 - 595 people like romance movies
 - 440 people like horror movies
 - 280 people like both romance and horror movies.

A Survey of Preferences

- The results of the survey:
 - 595 people like romance movies
 - 440 people like horror movies
 - ✓ 280 people like both romance and horror movies.
- A Venn diagram can be used to illustrate the results of the survey.

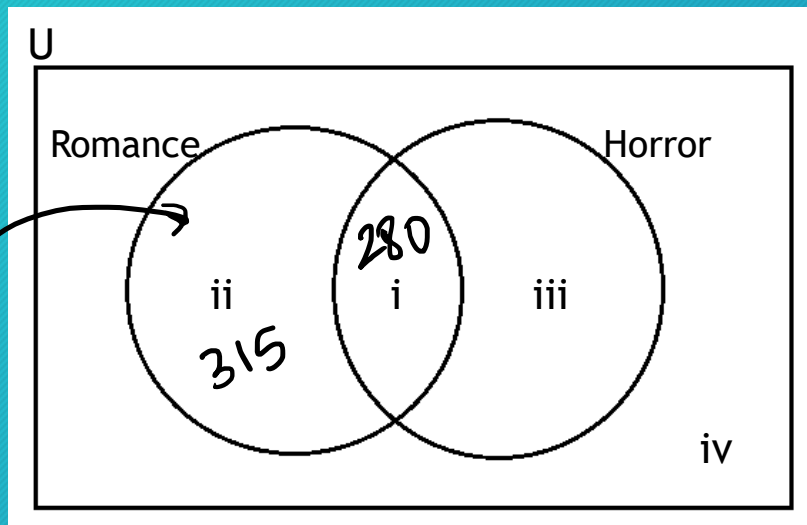


The size of which region can be immediately determined?

Region i is the region depicting those who enjoy both romances and horror flicks. We are told there are 280 people in this group.

A Survey of Preferences

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 - 440 people like horror movies
 - ✓ 280 people like both romance and horror movies.
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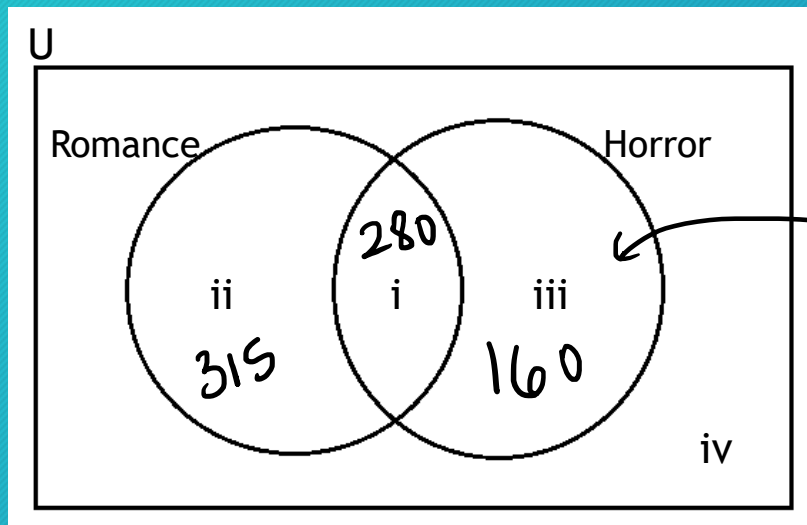
$$\begin{array}{r} 595 \\ - 280 \\ \hline 315 \end{array}$$

How many people are in region ii?

Region ii contains those people who like *only* romance movies. We know a total of 595 people like these movies, but 280 of them also like horror films. That means 315 like only romance movies.

A Survey of Preferences

- The results of the survey:
 - ✓ 595 people like romance movies
 - 440 people like horror movies
 - ✓ 280 people like both romance and horror movies.
- A Venn diagram can be used to illustrate the results of the survey.



How many people are in region iii?

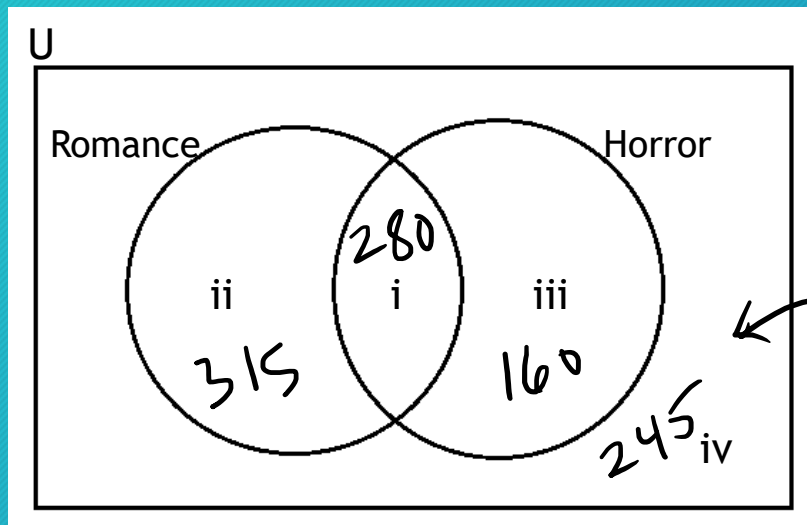
Region iii contains those people who like *only* horror movies. We know a total of 440 people like these movies, but 280 of them also like romances. That means 160 like only horror movies.

$$\begin{array}{r} 440 \\ - 280 \\ \hline 160 \end{array}$$

A Survey of Preferences

- The results of the survey:
 - 595 people like romance movies
 - 440 people like horror movies
 - 280 people like both romance and horror movies.
- A Venn diagram can be used to illustrate the results of the survey.

1000 people surveyed



How many people are in region iv?

Region iv contains those people who like neither romance movies nor horror movies. If we add up the other 3 regions and subtract that value from the total number surveyed, 1000, we know that 245 people like neither type of movie.

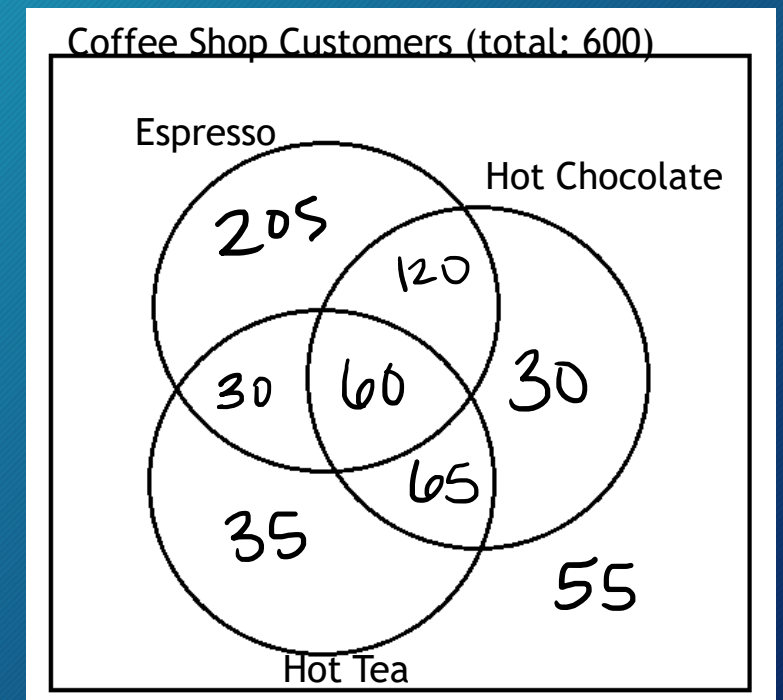
$$\begin{array}{r} 1000 \\ - 315 \\ - 280 \\ - 160 \\ \hline 245 \end{array}$$

A Hot Beverage Survey

- A local coffee shop surveyed 600 customers.
- The results of the survey:
 - 415 customers like espresso drinks.
 - 275 customers like hot chocolate.
 - 190 customers like hot tea.
 - 180 customers like both espresso drinks and hot chocolate.
 - 90 customers like both espresso drinks and hot tea.
 - 125 customers like both hot chocolate and hot tea.
 - 60 customers like all three.

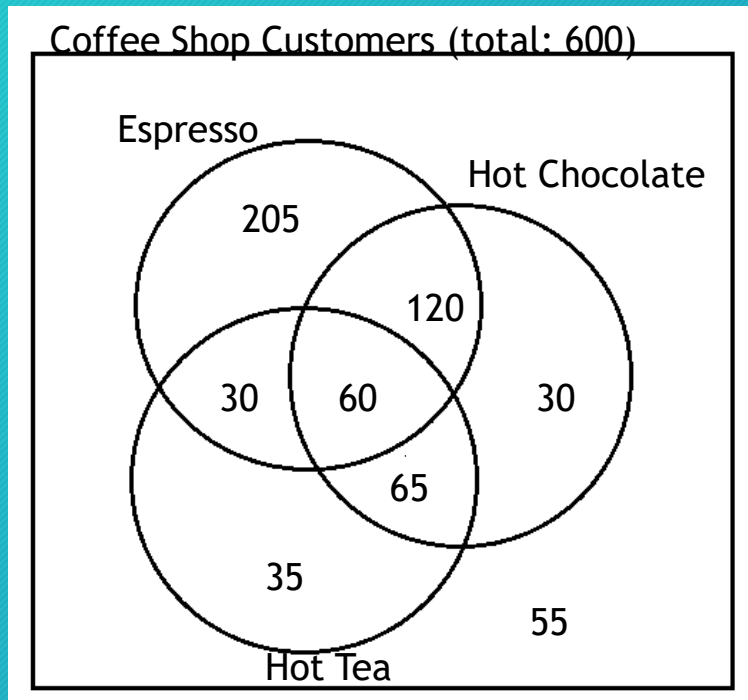
A Hot Beverage Survey

- Take a moment to complete the Venn Diagram, determining the number of customers in each of the eight regions.
- A local coffee shop surveyed 600 customers.
- The results of the survey:
 - ✓ 415 customers like espresso drinks.
 - ✓ 275 customers like hot chocolate.
 - ✓ 190 customers like hot tea.
 - ✓ 180 customers like both espresso drinks and hot chocolate.
 - ✓ 90 customers like both espresso drinks and hot tea.
 - ✓ 125 customers like both hot chocolate and hot tea.
 - ✓ 60 customers like all three.



A Hot Beverage Survey

- The results:



- How many customers:
 - Like exactly two of the three types of hot beverages? $30 + 120 + 65 = 215$
 - Like only hot chocolate? 30
 - Like only one of the three types of beverages? $205 + 30 + 55 = 270$