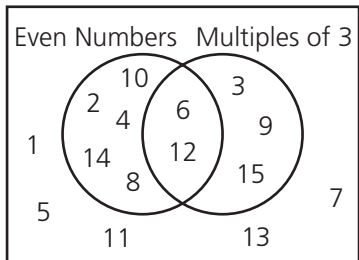


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LESSON 18 Venn Diagrams

A **Venn diagram** is a way to organize and show the relationship between sets of data. A Venn diagram uses circles to show sets. The circles in Venn diagrams typically **overlap**. The overlapping area shows the elements that belong to both sets. This is the **intersection** of the sets.



The numbers 6 and 12 belong to the intersection because they are both even numbers and multiples of 3. The numbers 1, 5, 7, 11, and 13 are shown outside the circles because they are not even or multiples of 3.

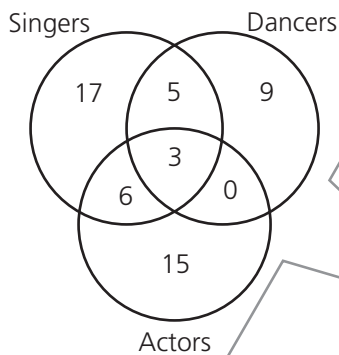
A **set** is a collection of objects, often numbers. The members of a set are called **elements**.

If the circles are separate, each set is unique and they have no elements in common.



Read each problem. Circle the letter of the best answer.

Use this Venn diagram to answer questions 1–4.



1 How many people are both singers and dancers?

- A 5
- B 8

- C 26
- D 34

2 How many people are actors but **not** singers or dancers?

- A 3
- B 15
- C 18
- D 24

3 How many total dancers are there?

- A 5
- B 9
- C 17
- D 23

4 How many people participate in exactly two of these activities?

- A 3
- B 5
- C 11
- D 14

Find the intersection of the circles showing singers and dancers. The diagram shows 5 people who are singers and dancers. It also shows 3 people who are singers, dancers, and actors. So, there are $5 + 3 = 8$ people who are singers and dancers. The correct answer is B.

Read each problem. Write your answers.

- 5** Two workshops are being offered.
- 25 people are in the workshop on designing Web pages.
 - 33 people are in the workshop on using spreadsheets.
 - 16 people are in both of these workshops.

A In the space below, draw a Venn diagram to show this information.

B Explain how you knew where to put the numbers in your diagram.

- 6** Over the summer, 64 students read a book by Mark Twain and 45 students read a book by Lewis Carroll. Of these, 28 students read books by both authors.

A How many students read a book by Mark Twain but not Lewis Carroll?

Answer: _____

B How many students read a book by only one of the authors?

Answer: _____

C Explain how you found your answers to parts A and B.
