# Use or Make a Picture or Diagram
Guess and Check

16 Davita made a puzzle for her sister to solve. She drew three overlapping circles and labeled each one. Then she said, "Put one number in each circle and in each space where the circles overlap. The five numbers should add up to 40. What are the numbers?"

Hint: More than one answer is possible.

Multiples of 4	Multiples of 3	Odd numbers
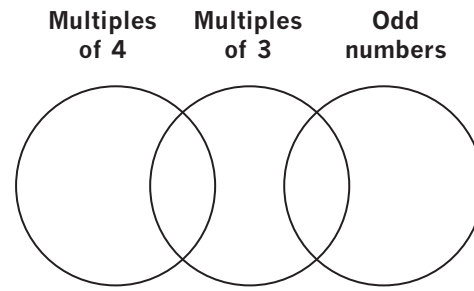
FIND OUT

- **What is the problem about?** Encourage students to restate the problem in their own words.
- **What do you have to find out to solve the problem?** *What five numbers fit the clues and add up to 40*
- **What does the problem tell you about the numbers?** *Together they make a sum of 40; one is a multiple of 4; one is a multiple of 3; one is a multiple of both 4 and 3; one is an odd number; one is both an odd number and a multiple of 3.*

CHOOSE STRATEGIES

You can *Use or Make a Picture or Diagram* and *Guess and Check* to help you solve this kind of problem. Use a Venn circle diagram. This diagram has three circles that overlap. Put a number in each part of the circles to help you work out the problem.

🍎 TEACHING TIP

Talk with students about the parts of a Venn diagram. Point out where the circles overlap. Help students understand that two circles share the overlapping spaces, and that a number you put in this space must fit the labels for both circles. The numbers in the other parts of the circles must fit only one label.

To review the meaning of *multiple*, have students find the products of 4 times 2, 4 times 3, and so on. Point out that each of those products is a multiple of 4. Do the same with multiples of 3.

SOLVE IT

1. **Look at the Venn circle diagram.**

   **What is the label at the top of the first circle?**
   Multiples of 4
   At the top of the second circle? *Multiples of 3*
   At the top of the third circle? *Odd numbers*

2. **A space where two circles overlap is inside both circles. What label could you put on the first of these overlapping spaces?** *Multiples of 4 and 3* **What label could you put on the other overlapping space?** *Multiples of 3 and Odd numbers, or Odd numbered multiples of 3*

3. **Look for a number to put in each part of the circles. The numbers have to fit the labels.**

4. **How can you check your answer?** *See if the 5 numbers add up to 40* **If these numbers don't fit the information in the problem, try different numbers.**

5. **What could the numbers be?**
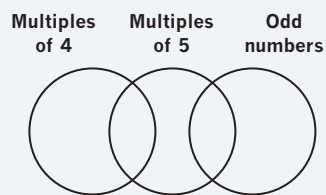
   Solutions include:

   Multiples of 4 **Multiples of 3** **Odd numbers**

   8 (12) 6 (9) 5
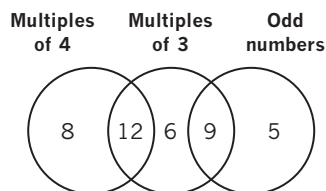
LOOK BACK

Students should read the problem again and check their work. Encourage them to ask themselves, **Did I answer the question that was asked? Does my answer make sense?**

Some teachers like to give students one or more of the Writing Questions (page xx), asking them to explain how they solved the problem.
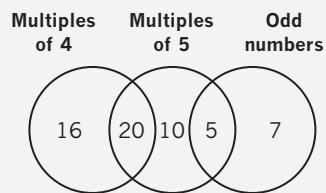
EXTENSION PROBLEM

Put a number in each space. The five numbers add up to 58.

Multiples of 4 **Multiples of 5** **Odd numbers**

Hint: More than one answer is possible.

Solutions include:

Multiples of 4 **Multiples of 5** **Odd numbers**

16 (20) 10 5 7

TALK ABOUT IT

Have students talk with a partner or small group about how they solved the Extension Problem. Students can share their different ways of thinking. Ask questions like, **What number did you look for first? What worked? What didn't work?**

WRITE YOUR OWN PROBLEM

Have students write similar problems of their own. Students can then exchange the problems and solve them.

PRACTICE

Similar Practice Problems: 60, 61, 62, 99*

When you give students a Practice Problem, ask questions such as, **Have you solved a problem like this before? What strategies helped you solve it?**

*Calculator is recommended.