

How Many Sides Altogether?

Purpose

Students will make decisions about how to set up a problem and solve it in reasonable ways, justifying their reasoning.

Materials

For each group of students: cubes, toothpicks, drawings of triangles and squares

Activity

A. Introducing the Problem

1. Divide students into groups of three or four, and give each group a supply of cubes, toothpicks, and drawings of triangles and squares.
2. Give students the following problem: "How many sides do a triangle and a square have altogether?"

B. Solving the Problem

1. Instruct student groups to discuss the problem, decide how they might solve it (including how they might use the cubes, toothpicks, and drawings), and how they might explain their answer.
2. Listen to student discussions and prompt where necessary with suggestions, such as making the shapes with the toothpicks or placing a cube on each side of each drawing. Also prompt groups that have found an answer to develop a clear explanation of what they did.
3. If some students are ahead of their groups and can answer the question immediately, form a special group and give them extensions of the original problem (e.g., two triangles and one square, one triangle and two squares, three triangles and five squares).

C. Discussion

1. When most groups have solved the problem, discuss with the whole class how the students found their answers.
2. Ask students for detailed explanations of their methods as well as their answers (e.g., making the shapes with toothpicks, gathering the toothpicks, and counting them; or placing cubes on each side of the shapes in the drawings, removing the cubes, and counting them).

MEETING
INDIVIDUAL



NEEDS

Help students who may have difficulty understanding the task or how they might approach it by asking them questions that will lead them toward finding a method of solving the problem.

connecting
across the
curriculum



English/
Language Arts


Ask students to provide clear, thorough explanations of the methods by which they solved the problem.


Standards Links
K.1.1, K.1.6, K.2.1, K.4.1


Questions for Review


Basic Concepts and Processes

During the activity, discuss the following questions with your students to gauge their understanding of the Standard Indicators:

 What does a triangle look like? What does a square look like?

 How many sides does a square have? How many sides does a triangle have?

 How many sides do they have together?

 How did you determine how many sides there are altogether?
