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Strategy 1: Act it out

Learning Objectives

- Manipulate objects to solve problems
- Perform roles and mimic actions to find solutions

Problem 1

Materials:

- 30 small cubes for each student
- student activity (page 10)

Introduction

Use cubes to build a model of the tower shown on the student activity page. Display your model in front of the classroom. Then read the problem aloud and introduce the word cube. Tell students that the blocks in the tower are cubes. Hold up a cube and show students that it has 6 sides, or faces. Have students count the faces on one of their cubes. Point out that each face is a square and that all the faces are exactly the same shape and size. Have students locate and name some cube-shaped objects in your classroom.

Teaching Procedure

Read each question aloud. Then work through the question with students. Students should use the picture on the student activity rather than your model of the tower to answer the questions.

a. (No. Explanations will vary. Sample answers: There need to be blocks underneath to hold up the blocks on top; there are some blocks behind the blocks I can see.)

b. (3 blocks. Yes.)

c. (Answers will vary. Accept all answers given.)

Have students work through the problem. They can work individually, in pairs, or in groups of 4. Allow students time to build their towers. Some students will need help. Others may want to come to the front of the classroom to look at your model or to take it apart. Give students the necessary guidance. If students have difficulty counting blocks while they are building their towers, suggest that they count the blocks after the towers are built or that they take apart the towers to count the blocks.

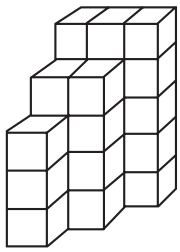
Answer: You need 11 blocks to build the tower.

Think about:

Did you count all of the blocks – even those you could not see in the picture? (Answers will vary.) This question should serve as a reminder if students forgot to count the blocks they could not see in the picture. To help them check, have students position themselves in front of their towers so that they can view the towers from the perspective given in the picture. At this point, you may also want to have students refer back to Question c to find whether they had thought there were 3 blocks they could not see in the tall part of the tower.

Challenge:

How many blocks would you need to build this tower? (26 blocks)



Use cubes to build a model of this tower. Display your model in front of the classroom. Have students use their own cubes to duplicate your model. Allow students time to explore various methods of counting the cubes in their models.

Strategy 1: Act it out *(cont.)*

Problem 2

Materials:

- One large piece of paper for each student or every 2 students
- Student activity (page 11)

Introduction

Before you read the problem aloud, be sure students understand the meaning of half. If necessary, explain that if a whole thing, like a piece of paper or a circle, is divided into 2 pieces, 1 of the 2 pieces is a half. If appropriate, introduce the symbol $\frac{1}{2}$ and show students how it stands for 1 out of 2 pieces.

Teaching Procedure

Read each question aloud. Then work through the question with students. Students can act out the questions to help them find the answers.

a. (2 children. Explanations will vary. Sample answers:

Each child needs half a piece of paper, so 2 children can share 1 piece; half means 2 parts; 2 halves make a whole thing.)

To help students answer the question and better understand the problem, cut a piece of paper in half and fold each half to show children how to make a card.

b. (2 pieces of paper)

c. (Answers and explanations will vary.)

This question is intended to help students think about the size of their answer before they solve the problem. Some students will easily notice that the answer will be less than 20. Others will need to act out the problem to find this information.

Have students work through the problem. To act out the problem, students can work as a whole class, in pairs, or individually. All students should first experiment with making two cards from one piece of paper. If there are at least 10 students in your classroom, have 1 student at a time bring his or her 2 cards to the front of the room. Have a volunteer keep track of the number of cards brought forward and the number of pieces of paper used to make the cards. If students work independently to solve the problem, they can draw 20 cards on a large sheet of paper and then circle groups of 2 cards to show that each pair was made from 1 piece of paper.

Alternatives:

Students can use a table such as the one on the next page to solve the problem. Distribute copies of the table in which students can write. Explain how to enter information in each row and column. (Note that answers in parentheses are for teacher use.)

Number of Pieces	1	2	3	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Number of Cards	2	4	6	(8)	(10)	(12)	(14)	(16)	(18)	(20)	(22)

Answer: The whole class needs 10 pieces of paper.

Challenge:

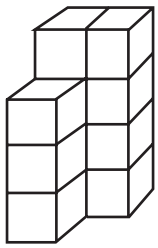
How many pieces of paper does your class need to make greeting cards? (Answers will vary.)

If the number of students in your class is odd, discuss with the class how to solve the problem. You might suggest that the students give you half of a piece of paper so that they can work with an odd number.

Name: Date:

Act it out

Problem 1



The tower in the picture is made out of blocks.
How many blocks do you need to build the tower?

Questions: Think first, then write the answers.

a. Can you see all the blocks you need to use? _____

How do you know that? _____

_____

_____

b. How many blocks are in the short part of the tower?

_____

Can you see all the blocks in the short part of the tower?

_____

c. How many blocks are in the tall part of the tower?

_____

How many blocks do you think you cannot see in the tall part of the tower? _____

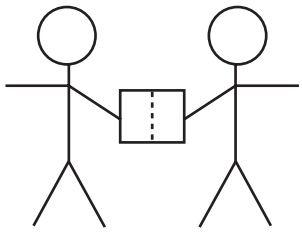
Use blocks to build the tower. Make sure your tower looks like the picture. Count the blocks you used.

Answer: You need _____ blocks to build the tower.

Name: Date:

Act it out *(cont.)*

Problem 2



There are 20 children in the class. Each child needs half of a piece of paper to make a greeting card. How many pieces of paper does the whole class need?

Questions: Think first, then write the answers.

a. How many children can make a card from one piece of paper? _____

How do you know that? _____

_____

b. How many pieces of paper do 4 children need to make cards? _____

c. Will the answer to the problem be greater than or less than 20? _____

Why do you think so? _____

_____

Use pieces of paper to find the answer.

Answer: The whole class needs _____ pieces of paper.

#CA-91830 *Figure it out,* Book 2