

should have a set of quadrilateral pieces spread out in front of them. Select one piece from your set of quadrilaterals, and hide it in your pocket or desk drawer. In order to determine which piece you have hidden, the groups in turn ask questions that can be answered by yes or no (e.g., Does the figure have four equal sides?) or make an actual guess by naming a particular quadrilateral piece. The team that holds up the specific piece on its turn is the winner.

This game is rich in opportunities to develop strategies and reasoning. Students must formulate good questions, that is, questions that will eliminate several pieces at once and narrow the possibilities. Note that the game can be won only by actually naming the piece. As the game proceeds, students must decide whether to risk naming a piece or ask a more general yes-or-no question. To take advantage of opportunities that arise to discuss these strategies with the students, ask questions such as the following:

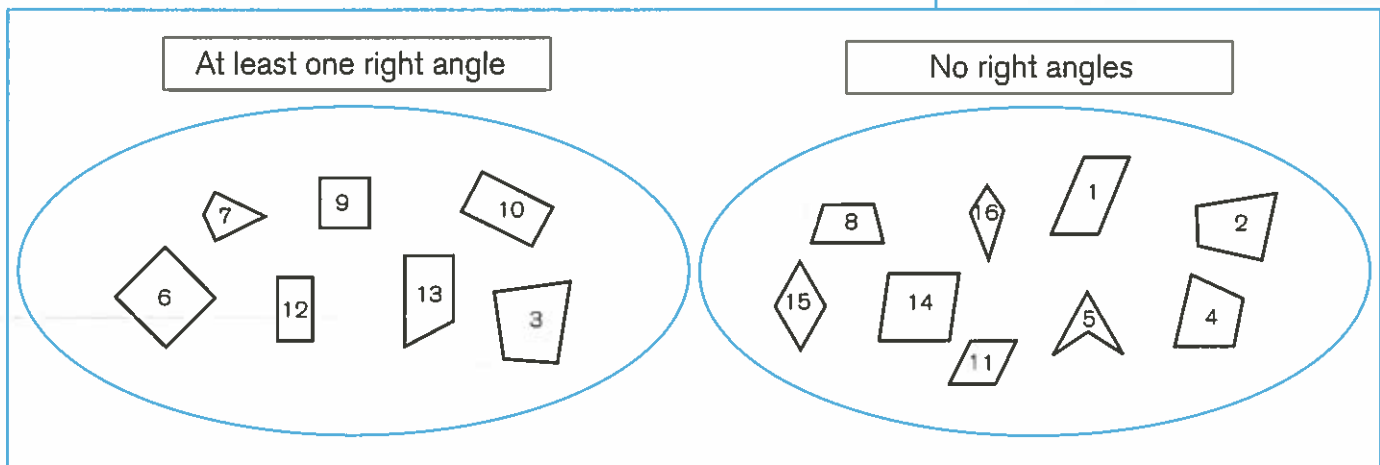
- What is the best first question to ask? Why?
- Is there another question that is equally good? Why or why not?
- If you were left with a square, a rhombus, and a rectangle, what would be a good question to ask? (Does the shape have right angles? Does it have congruent sides?)

### Explore

The students place the sixteen quadrilateral pieces in Venn diagrams they create from the three pieces of yarn or string or the three hoops and label the rings with the categories for each task on “Ring Labels.” It is advisable for teachers to model task 1 (fig. 1.8), especially if the students are not familiar with Venn diagrams.

Fig. 1.8.

The rings for task 1 with the quadrilaterals properly placed



If the students have not previously worked with Venn diagrams, explain that the quadrilaterals that possess the characteristics for both rings should be placed in the intersection of the two rings. For example, if one ring were labeled “Right angles” and the other, “Congruent sides,” a square would be placed as shown in figure 1.9.

Each group of students can paste the rings on a large piece of paper for viewing. A summary class discussion can generate good mathematical discourse about the defining characteristics of each quadrilateral and the relationships among the quadrilaterals. To facilitate this discussion, ask questions such as these:



A similar activity, Shape Sorter, is available on the CD-ROM.