

## Activity 12

**Concepts/Skills:**

Pythagorean theorem, squares and square roots, measurement, problem solving

**Calculator:**

TI-30Xa SE or TI-34

**Objectives:**

Students use the Pythagorean theorem to compute the diagonals of rectangles.

**Going out of Business****Getting Students Involved**

- ◆ What do you call the line segment joining opposite corners in a rectangle?
- ◆ How can you find the length of a diagonal? What do you need to know?

*A diagonal.*

*Use the Pythagorean theorem.*

**Making Mathematical Connections**

Review the ideas of square and square root. If necessary, review the use of the  $\boxed{x^2}$  and  $\boxed{\sqrt{x}}$  keys.

▮ Transparency Master F: Square and Square Root

**Carrying Out the Investigation**

Use the transparency at the end of this activity (page 99) to review the Pythagorean theorem.

Explain the scenario. Then let students begin work on pairing the TVs with the openings.

If students are having difficulty, ask them how the Pythagorean theorem might be used to help solve the problems.

***Making Sense of What Happened***

Have students share their solutions. Write the lengths of the diagonals on the transparency. You may want to make a transparency of the TV openings to use in the discussion.

- ◆ Did you pair the openings with TVs in order? If not, which one did you pair first?

*Some students may work from smallest to largest, or by trying to identify “Pythagorean triples” first.*

***Continuing the Investigation***

Ask students to find several rectangles that have diagonals of the same length. How many are there for any particular diagonal?

For example, a rectangle that is 3 by 4 has a diagonal of 5, and a square that is 3.535533906 on a side has a diagonal of 5, at least within the accuracy of the calculator.

***Solutions***

- A. TV #3
- B. TV #9
- C. TV #2
- D. TV #7
- E. TV #4
- F. TV #1
- G. TV #5
- H. TV #10
- I. TV #8
- J. TV #6