

**Description**

- Apply the Pythagorean relationship.

**Materials**

- transparencies and markers
- BLM 14.1

**Assessment Opportunities**

**Minds On...**

**Whole Class → Connecting to Previous Lessons and Introducing Problems**

Revisit the problem of putting a 1.2 m × 2.4 m piece of plywood through a 1 m ×  $\frac{3}{4}$  m window. Ask students to indicate whether or not they thought the plywood will fit through the window. Have volunteers present each side of the argument (if there is a difference of opinion). Discuss and determine the correct answer. (Yes, the plywood will just fit, as long as it is not too thick. The diagonal of the window is 1.25 m. Some students may recognize that 3 : 4 : 5 is a multiple of  $\frac{3}{4} : 1 : 1.25$ .) Use this as a point of departure to lead into other practical problems that can be solved using the Pythagorean relationship.

**Curriculum Expectations/Performance Task/Marking Scheme:** Collect and assess students' follow-up activity responses.

If there are four stations and 7 or 8 groups in the class, two groups can work independently at each station.

**Action!**

**Small Groups → Developing Understanding**

Student groups rotate through four different problem centres over the course of the lesson, solving the problems on BLM 14.1. Each group is given the task of writing up a full solution to one specific problem on overhead transparencies for discussion.

Have two versions of a written solution on an overhead transparency to compare at the close of the lesson.

**Consolidate Debrief**

**Whole Class → Presentations**

Solutions are presented and discussed. Clarity of communication and effective use of mathematical terminology are highlighted.

Encourage students to take careful notes during the presentations to use with the consolidation activity and assessment.

**Curriculum Expectations/Learning Skills/Presentation/Rubric/Checklist:** Assess student presentations for understanding of concepts, communication, application of procedures, and problem-solving skills.

**Home Activity or Further Classroom Consolidation**

Write complete solutions for all four problems on worksheet 14.1. These solutions will be collected next class and assessed. Critically look at your work to ensure that it is your best.

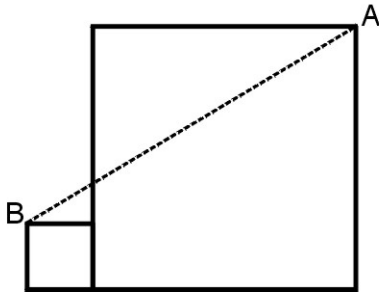
Create and record a practical problem that would require the use of the Pythagorean relationship in its solution. Solve the problem on a separate sheet of paper.

*Application  
Concept Practice*

## 14.1: Carousel of Pythagorean Problems

### Station 1

Find the distance from A to B given the smaller square has a perimeter of 4 cm and the larger square has an area of  $16 \text{ cm}^2$ .



### Station 2

A ladder leans against a brick wall that is 8 m high. The base of the ladder is 2 m away from the base of the wall and the ladder extends  $\frac{3}{4}$  of the way up the wall.

How long is the ladder?

### Station 3

A rocket is launched into the sky on a windy day. The rocket has a vertical velocity of 15 m/s. There is a strong wind blowing east to west at 35 m/s.

How far from the start point is the rocket after 60 seconds?

### Station 4

The distance between the bases in a baseball diamond is 27.4 metres. You picked up a ground ball at first base and you see the other team's player running towards third base.

How far do you have to throw the ball to get it from first base to third base?