# Inquiry 14.1 Calculating Mechanical Advantage

## PROCEDURE

1. Use the effort distance and load distance data you collected in Inquiry 11.2 and recorded on Student Sheet 11.2 (Table 1) to calculate the ideal mechanical advantage for each inclined plane slope. Record your data and calculations in Table 1 on Student Sheet 14.1: The Mechanical Advantage of Machines.

2. Use your effort force and load force data on Student Sheet 11.2 to calculate the actual mechanical advantage for each plane slope. Record your data in Table 2 on Student Sheet 14.1. Then use the blank graph on the student sheet to graph actual mechanical advantage versus slope of the incline.

3. Answer the following questions in your science notebook:

   *A. Which slope has the largest actual mechanical advantage?*

   *B. Which slope has the largest ideal mechanical advantage?*

4. Use the data you collected in Inquiry 12.1 and recorded on Student Sheet 12.1 to calculate the ideal mechanical advantage and the actual mechanical advantage for the pulley systems you assembled. Record your data in Tables 3 and 4 on Student Sheet 14.1.

5. In your science notebook, answer th lowing questions based on your data pulleys:

   *A. Which pulley had the greatest ide mechanical advantage?*

   *B. Which had the smallest actual mechanical advantage?*

   *C. Why would you want to use a pu that had a small mechanical advan*

## REFLECTING ON WHAT YOU'VE DONE

Write your answers to the following questi in your science notebook:

*A. Examine mechanical advantage f the inclined planes and pulleys. Wha pattern do you see when comparing ideal mechanical advantage with ac mechanical advantage? How can yo explain the pattern?*

*B. What does actual mechanical adv tage tell about a machine's usefulnes*

*C. You did not calculate mechanical advantage for the levers you studied Lesson 13. How do you think the ide and actual mechanical advantages o lever might compare with those of th pulley and the inclined plane? Expla your reasoning.*