

# ACTIVITY #2

Name: \_\_\_\_\_

## Another Formula for Felix!

For use with pages 12–13 in the September 6, 2010, issue of Scholastic *MATH* Magazine. Allow calculator use.

To approximate the relationship between the distance ( $d$ ) Felix has fallen and his speed, or *velocity* ( $v$ ), the scientists monitoring his jump can use the equation

$$d = v^2 \div 2g$$

The variable  $g$  represents the the force of gravity. High in the atmosphere,  $g$  is 31.9 feet per second<sup>2</sup>.

**1** Remember, when Felix breaks the speed of sound, his velocity will be 1,012 feet per second.

**a.** Use the above formula to write an equation to find the distance he has freefallen at that point.

**b.** Solve the equation and round your quotient to the nearest foot.

**c.** Felix began the jump 120,000 feet above Earth. Now how high above Earth is he?

**2** Even after breaking the speed of sound, Felix will continue to accelerate for about another 5,500 feet before reaching his top speed.

**a.** About how high above Earth will Felix be when he reaches his top speed?

**b.** What total distance has he fallen at this point?

**c.** You know  $g$  and the total distance ( $d$ ). So use the formula to solve for Felix's velocity ( $v$ ) at his top speed. You'll need to use a calculator. Round your answer to the nearest foot per second.

## BONUS

Knowing there are 3,600 seconds in an hour and 5,280 feet in a mile, find Felix's approximate top speed in miles per hour. Round to the nearest mph.