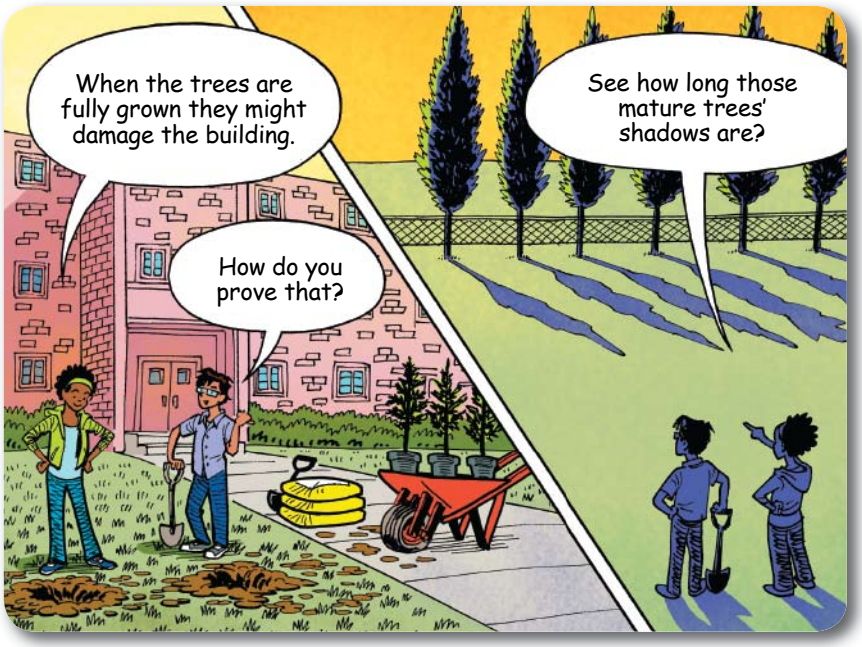
The Case of the Perilous Planting

Athena and Rick have been asked to inspect the planting of some Scots pine trees at school. Athena notices that holes have been dug for the young trees (now 3 feet tall) and that the holes are about 60 feet from the school. "If the trees are too close," she says, "they could damage the building in a severe windstorm when they're fully grown."



"How do you prove that?" asks Rick. Athena notices some mature Scots pine trees with shadows about 30 feet long. She then measures a young tree's shadow and finds it to be one foot. "New holes need to be dug!" exclaims Athena. "The trees are too close to the school!"

WORK THE MATH

Show your work—use separate paper as needed.

1 **Why is Athena so sure that the young trees are being planted too close to the school building? Hint: Think about setting up a proportion as you did when you compared the distance on a map to the distance in the real world.**

2 **Just before sunset, the young trees cast a six-foot shadow. Using the height of a mature tree calculated in problem 1, how long are the mature trees' shadows just before sunset?**

NOW TRY THIS:

The school building is 45 feet tall. How long a shadow would the building cast if measured at the time of the tree-planting?