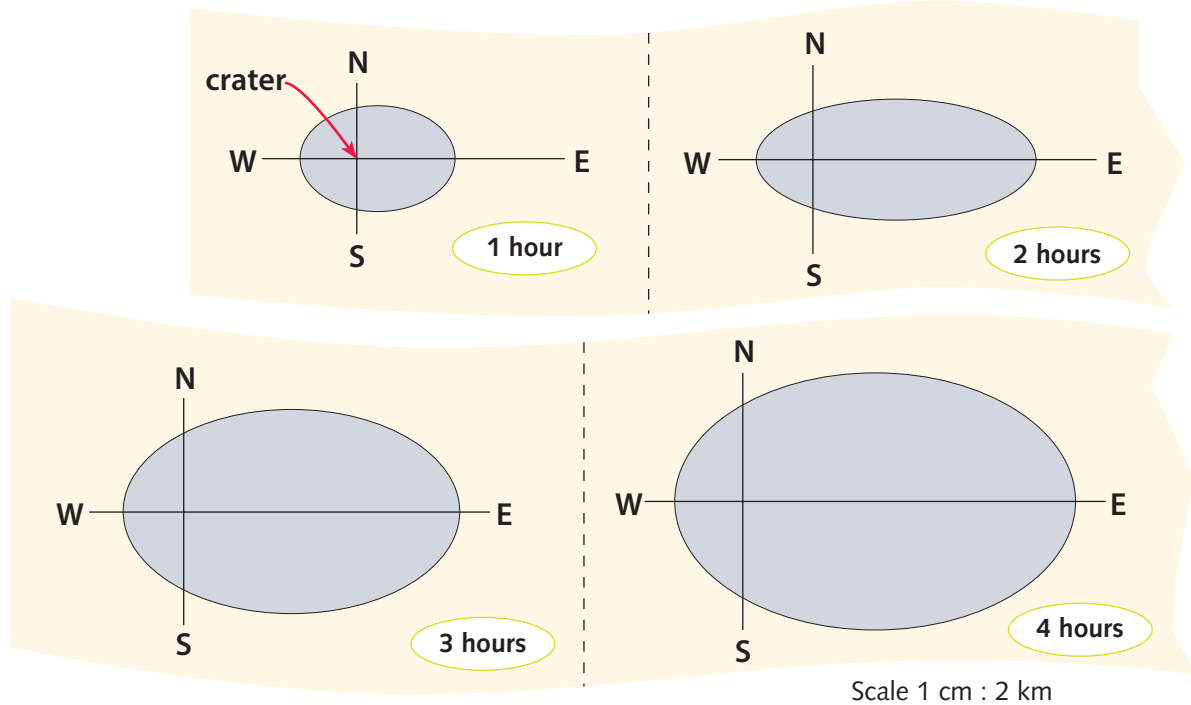
# Ash in the Air

You need: a calculator

ACTIVITY

Ashley is on duty in his helicopter. He receives reports of eruption activity on Mount Maungawhero. He radios headquarters for information.


The computer sends Ashley a display of the affected area.

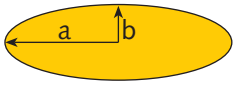



Scale 1 cm : 2 km

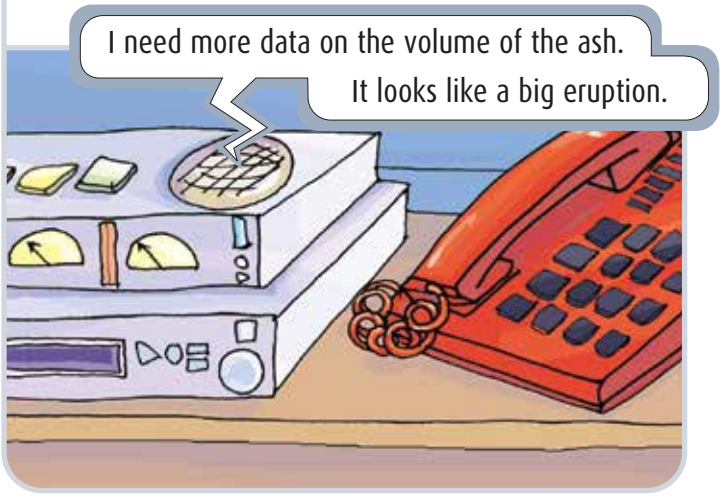
1. Explain why the shape of the ash cloud is changing.

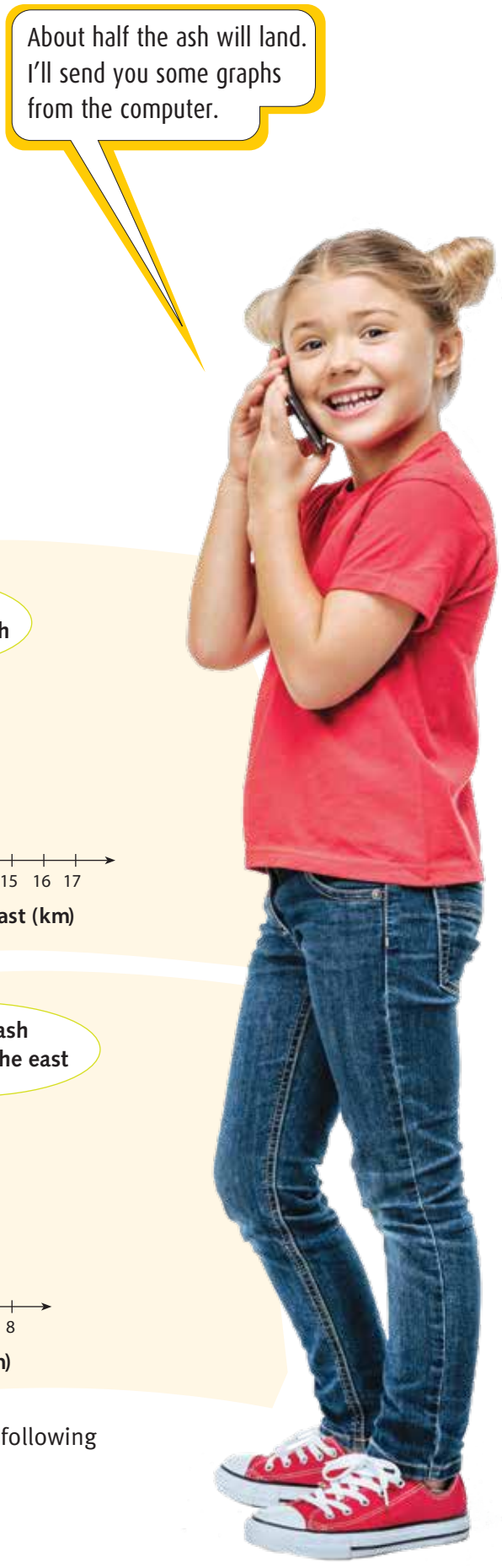
2. What is the area, to the nearest square kilometre, affected by the ash after 1, 2, 3, and 4 hours? Use your answers to predict the area after 6 hours.

**The formula for the area of an ellipse is $\pi ab$.**

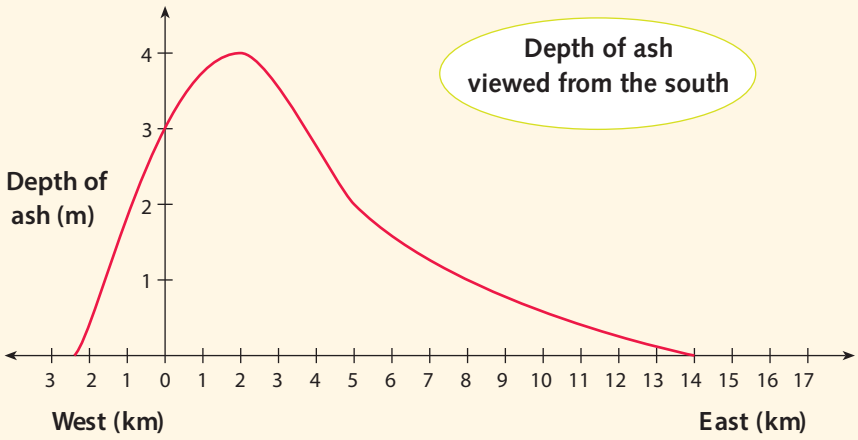


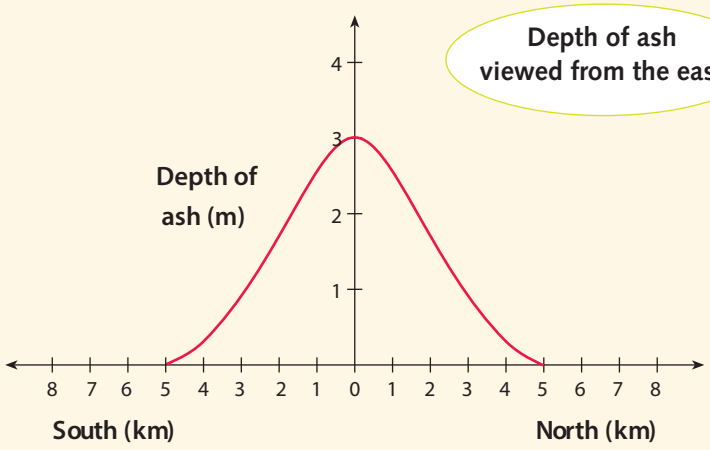
**3.** Ashley radios Cindy for more information.




The computer estimates how much ash will cover the ground after 8 hours. (The horizontal axis shows kilometres from the crater.)




How deep will the ash be on the ground in the following places after 8 hours:

**a.** 1 kilometre west of the crater?

**b.** 5 kilometres east of the crater?

**c.** 3 kilometres south of the crater?

4. The map below shows five towns that are at the base of Mount Maungawhero.
   a. Which towns will Ashley need to evacuate immediately?
   b. Estimate how many metres of ash will fall on each town after 8 hours.