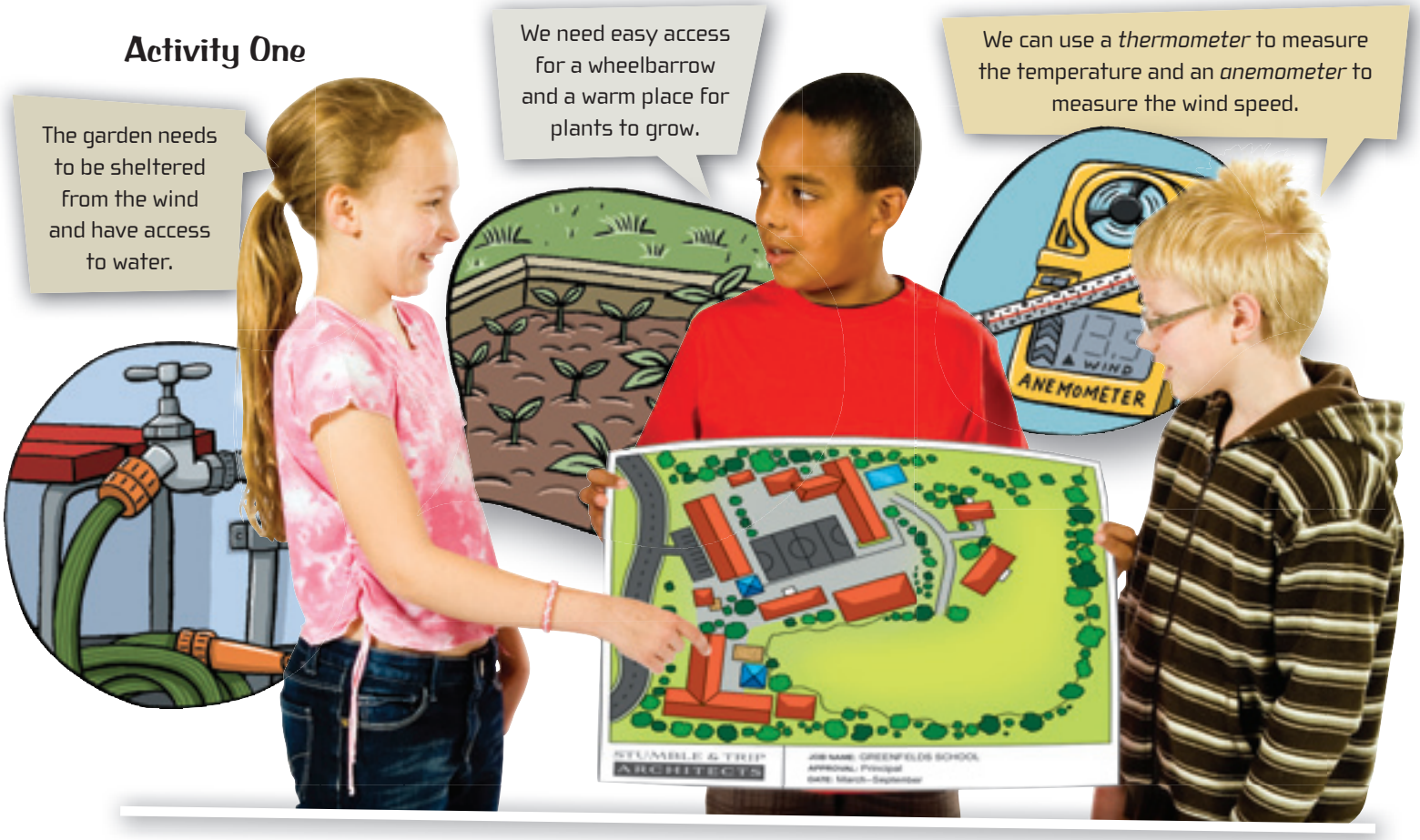
Location, Location ...

You need

- site readings and graphs (see copymaster)
- a computer spreadsheet/graphing program
- a thermometer
- classmates
- an anemometer
- a protractor

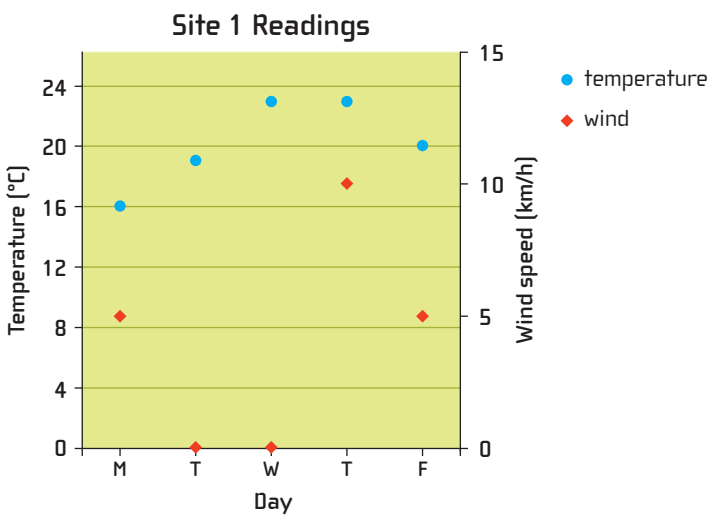
Jazmyn, Dembe, and Liam have been looking around the school grounds for the best place to make a vegetable garden. A garden needs resources such as sunlight and water.

Activity One



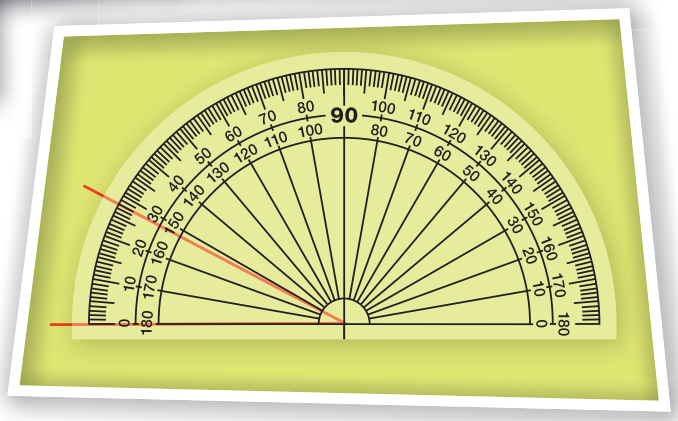
They each choose a site and take readings of the temperature and wind speed at 3 p.m. each day for 5 days. They record their readings in a spreadsheet and graph them. Here are Jazmyn's results:

Site 1		
Day (3 p.m.)	Temperature (°C)	Wind speed (km/h)
Monday	16	5
Tuesday	19	0
Wednesday	23	0
Thursday	23	10
Friday	20	5



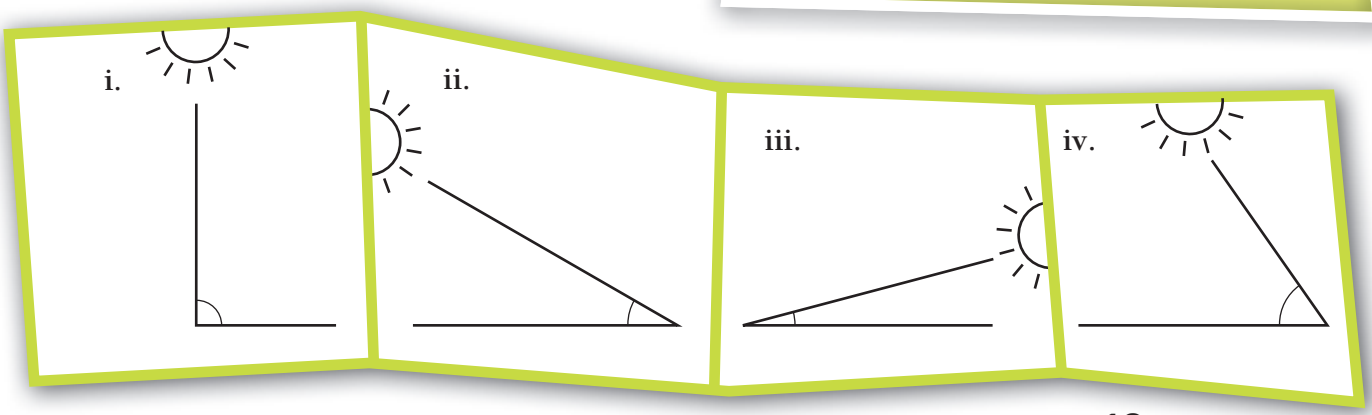
1. a. Use your copy of each person's readings and graphs to decide which site:
   i. is the best for temperature
   ii. is the most sheltered
   iii. is the best overall.
   b. What other factors should the students also think about?
2. In groups, identify possible garden sites around your school and take temperature and wind-speed readings. Graph your results.
3. Using the data you collect, compare the different sites and make a group decision as to which site is best.

Activity Two



1. You need to know about measuring angles before you can investigate the angle of the Sun.

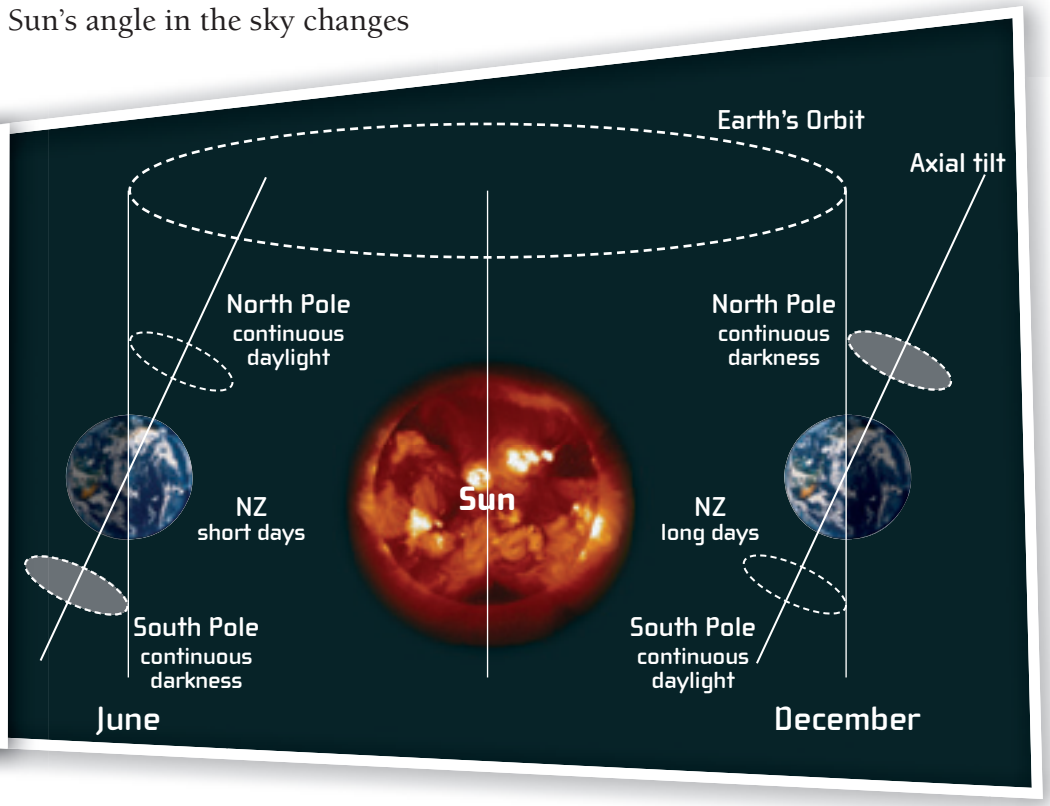
   Estimate or use a protractor to find these angles:



2. Find out why the Sun's angle in the sky changes over the year.

FACT

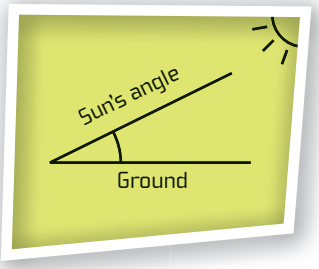
In December, the Southern Hemisphere tilts towards the Sun. In July, it tilts away from the Sun. This affects how long the day is and the amount of direct sunlight.



3. The highest point that the Sun reaches in the sky each day is called **solar noon**. In the following table, solar noon is shown as an angle to the ground.

Sun's Altitude at Solar Noon

City	Spring	Summer	Autumn	Winter
Auckland	53.2°	76.7°	53.2°	29.7°
Wellington	48.7°	72.2°	48.7°	25.2°
Christchurch	46.5°	70.0°	46.5°	23.0°
Dunedin	44.0°	67.5°	44.0°	20.5°



a. Work out the difference between the Sun's angle in summer and in winter for each of the cities. What do you discover?

b. Now work out the difference in angle for each new season for each city. What do you discover? Find out the reason for this.

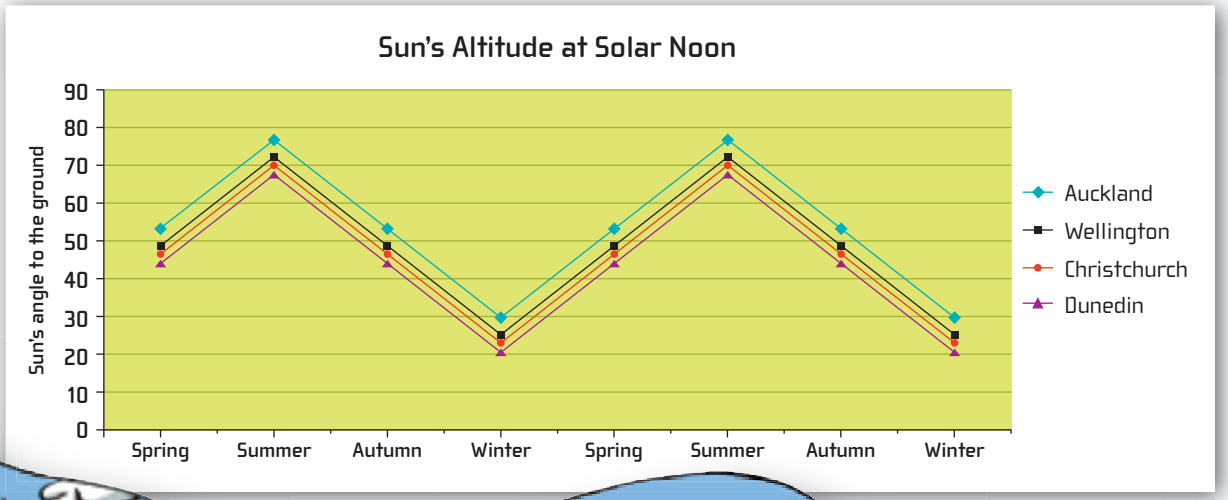
4. a. How might the Sun's angle to the ground affect a garden?

b. Why are summer temperatures hotter than winter temperatures?

5. Here is the data from question 3 as a line graph.

a. Why do you think the points for each city are at different heights?

b. What patterns can you see?

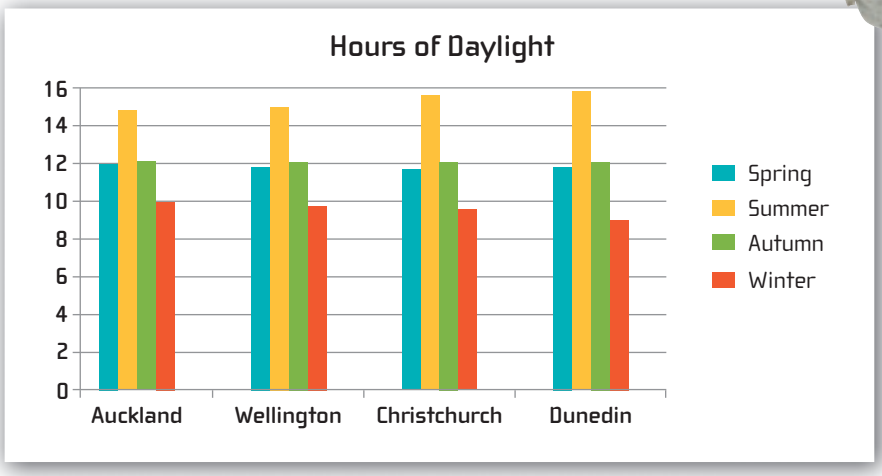


Activity Three

The bar graph below shows how many hours of daylight each of the four cities gets in spring, summer, autumn, and winter.

1. a. Write down two things that the graph tells you.

b. Discuss your observations as a class.



2. In which city would you prefer to have a garden? Why?

Focus Interpreting graphs