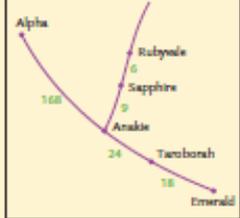


## Touring maps

Australia is a vast open country and distances between neighbouring towns can be huge. Distances between towns can be calculated from the information shown on the touring maps.

### Example

Josephine is in Emerald and plans to travel from Emerald to Rubyvale to go sapphire prospecting. How far is it by road?



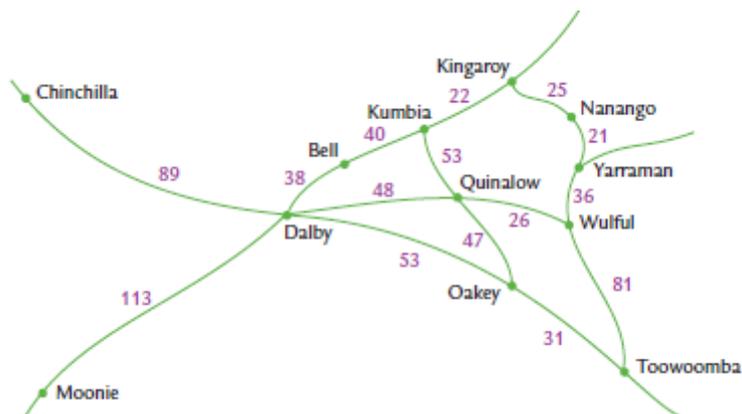
**Solution 3**  
Josephine must travel through Taraborah, Anakie and Sapphire.  
To work out the distance, add all the distances between the towns.

$$\begin{aligned} \text{Distance} &= 18 + 24 + 9 + 6 \text{ km} \\ &= 57 \text{ km} \end{aligned}$$

It is 57 km from Emerald to Rubyvale.

### Exercise Set 1

Use the touring map to answer the questions 1 to 7. All distances are in kilometres.



Q1. How far is it from Kingaroy to Wulful?

Q2. Calculate the distance from Oakley to Kumbia.

Q3. How much further is it to travel from Dalby to Wulful via Toowoomba than via Quinalow?

Q4. Keith takes 2 hours to ride his bike from Kumbia to Dalby. Use the formula

$$speed = \frac{distance\ travelled}{time\ taken}$$

To calculate his average speed.

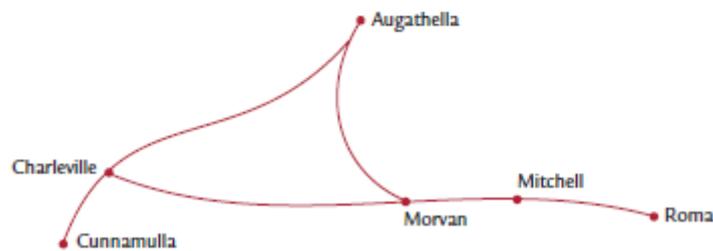
Q5. How long will it take to travel from Chinchilla at an average speed of 71 km/h?

Q6. Before Lois left Kingaroy to travel to Toowoomba she set her car's trip meter to zero. Between which two places was she when the trip meter showed she had travelled 68 km?

Q7. When Anna left Moonie her car's odometer showed 062 453. What was the reading when she arrived at Chinchilla?

Q8. The table below shows some of the distances between Augathella, Charleville, Cunnamulla, Mitchell, Morvan and Roma. The mud map shows the relative positions of the towns.

	Augathella	Charleville	Cunnamulla	Mitchell	Morvan	Roma
Augathella	0	85			93	
Charleville	85	0	197		90	268
Cunnamulla		197	0			
Mitchell				0		87
Morvan	93	90			0	178
Roma		268		87	178	0



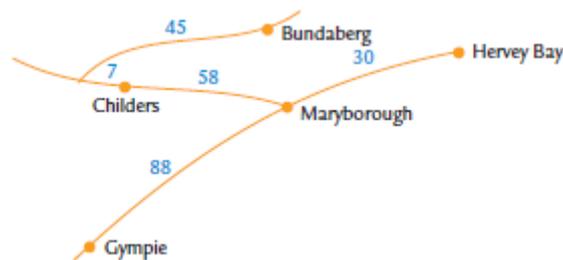
- Use the distances in the table to write the distances between locations on the mud map.
- Complete the missing values in the table.

## Hervey Bay whales

Humpback whales migrate each winter up the East Coast of Australia from Antarctica to the warm tropical waters off the coast of Queensland, to breed. The whales spend several months each year in the water near Hervey Bay.

### Exercise Set 2

Q1. This mud map shows some of the locations near Hervey Bay. All distances are in kilometres.



- How far is it from Bundaberg to Hervey Bay?
- How long will it take to drive from Bundaberg to Hervey Bay at an average speed of 80 km/h? Express your answer in hours and minutes.

Q2. At what time do you recommend Paul should leave Bundaberg to catch an 8 am whale watch boat in Hervey Bay?

Q3. A pod of whales swim at an average speed of 8 km/h during their 6000 km migration. How long does it take them to complete the trip?

Q4. Adult humpback whales are the fifth largest mammal on earth. A large humpback whale can have a mass of 40 tonnes. How many students with an average mass of 70 kg have a mass equivalent to one 40 tonne whale?

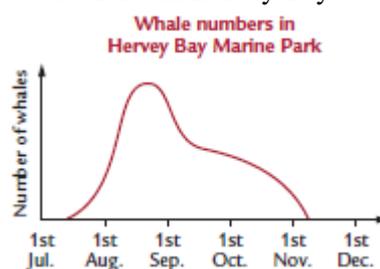
Q5. Baby whales are born in tropical waters and their mothers feed them milk. Whale mlk is very rich. It is 35% fat. How many litres of fat are contained in 250 litres of whale milk?

Q6. Baby whales increase their weight by 27 kg daily and increase their length by 26 cm monthly. A baby whale weighed 1 tonne and was 4.8 m long when she was born at the beginning of July. Estimate her weight and length when she and her mother left Hervey Bay at the end of October to swim back to Antarctica.

Q7. What town on the *Whale watch map* is located at map reference B5?

Platypus Bay is the best place near Hervey Bay to see whales. Suggest a map reference for Platypus Bay.

Q8. This graph shows the number of whales in Hervey Bay at different times during the year.



- a) Trevor wants to go to Hervey Bay to see some whales. In which month do you recommend he visit Hervey Bay?
- b) For what fraction of the year are there whales Hervey Bay Marine Park?

Q9. Neville and Vicki went on a whale trip from Hervey Bay. When the boat left Boat Harbour, it headed towards Rooney Point. Which of the following bearings could the boat be following?

- a)  $020^\circ$                       b)  $070^\circ$                       c)  $120^\circ$                       d)  $200^\circ$

Q10. Use the scale on the A4-sized map to calculate the distance between Boat Harbour and Rooney Point.

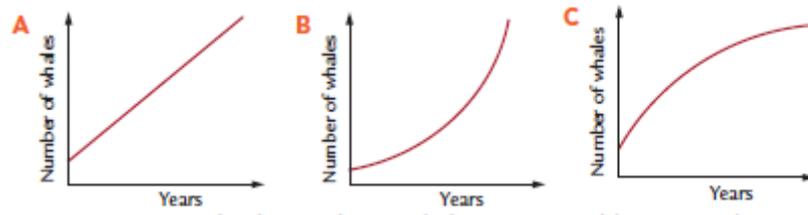
Q11. When John was checking the light at the top of Cape Sandy Light House, he saw a pod of whales 7.5 km due west of the light house. Show the position of the whale pod on the map.

Q12. Neville heard that the number of humpback whales migrating along the east coast of Australia is increasing by 13% each year. In 2004 the whale population was 4000. Assume that the number of whales is increasing by 13% when you answer these questions.

- a) How many whales were there in 2005?
- b) Explain how you know that the population of whales was 5108 in 2006.
- c) Complete this table of values.

<b>Year</b>	2004	2005	2006	2007	2008	2010
<b>Number of whales</b>	4000		5108			

- d) Which of these graphs best shows the future number of whales that will migrate along the east coast of Australia, if the number of whales continues to increase by 13% each year.



- e) Suggest a reason why the number of whales can't possibly increase by 13% each year indefinitely.