

In all questions, take the radius of the earth to be 6,400 km

Question 1

Melbourne (Victoria) is at 37.82° S and 144.97° E.

- i. Calculate the distance from Melbourne to the South Pole, travelling along the meridian. Give your answer to the nearest kilometre.

2 marks

- ii. Calculate the distance between Melbourne and the Equator, travelling along the meridian. Give your answer to the nearest km.

2 marks

- iii. Calculate the distance between Melbourne and the North Pole travelling along the meridian. Give your answer correct to the nearest km.

2 marks

Question 2

Both Torrens Creek (Queensland) and Kyabram (Victoria) are on the 145° E meridian of longitude, but Torrens Creek is at 20.77° S whereas Kyabram is at 36.32° S How far is it from Torrens Creek to Kyabram travelling along the 145° E meridian, correct to the nearest km ?

2 marks

Question 3

Both Broken Hill (NSW) and Morioka (Japan) are on the 141° E meridian of longitude, but Broken Hill is at 31.95° S whereas Morioka is at 39.70° N. How far is it from Broken Hill to Morioka travelling along the 141° E meridian, correct to the nearest km ?

2 marks

Question 4

A ship sailed due east from Cape of Good Hope South Africa (34° S, 18° E) to Cape Leuwin in Western Australia (34° S, 115° E).

- a. What is the time difference between the Cape of Good Hope and Cape Leuwin?

1 mark

- b. Calculate the distance in km between the Cape of Good Hope and Cape Leeuwin. Give your answer to the nearest km.

3 marks

Question 5

A cruise boat travels from King George Island (60°S , 60°W) due west to visit a penguin colony on the South Shetland Island (60°S , 64.25°W). Calculate how far the ship travelled, correct to the nearest km.

3 marks

Question 6

The Australian soccer team played against Brazil in the 2006 World Cup in Munich, Germany (48°N , 12°E) The game started at 5:00 pm on 18th June, Munich time. At what time did the game begin in Melbourne (38°S , 145°E)?

2 marks

Question 7

Both Perth (WA) and Baoding (China) are on the 115°E meridian of longitude, but Perth is at 31.93°S whereas Baoding is at 38.78°N . How far is it from Perth to Baoding travelling along the 115°E meridian, correct to the nearest km ?

2 marks

Question 8

Both Libreville (Gabon) and Kismayo (Somalia) are on the Equator on opposite sides of the African continent. Libreville is at 9.27° E and Kismayo is at 42.32° E. How far is it from Libreville to Kismayo travelling along the Equator, correct to the nearest km ?

2 marks

Question 9

Both the Galapagos Islands and the island of Nauru are on the Equator, but the Galapagos Islands are at 90.30° W whereas the island of Nauru is at 166.56° E. How far is it from the Galapagos Islands to Nauru travelling over the Pacific ocean along the Equator, correct to the nearest km?

2 marks

Question 10

Both Hamilton (Western Victoria) and Orbost (Gippsland) are on the 37.4° S parallel of latitude, but Hamilton is at 142.02° E whereas Orbost is at 148.27° E How far is it from Hamilton to Orbost travelling along the 37.4° S parallel, correct to the nearest km ?

3 marks

Question 11

Both Launceston (Tasmania, Australia) and Puerto Monti (Chile, South America) are on the 41.3° S parallel of latitude, but Launceston is at 147.08° E whereas Puerto Monti is at 72.57° W. How far is it from Launceston to Puerto Monti travelling over the southern Pacific ocean along the 41.3° S parallel, correct to the nearest km ?

3 marks

Question 12

Both Sydney (New South Wales) and Margaret River (Western Australia) are on the 33.5° S parallel of latitude, but Sydney is at 151.13° E whereas Margaret River is at 115.04° E. How far is it from Sydney to Margaret River travelling along the 33.5° S parallel, correct to the nearest km ?

3 marks

Question 13

A direct flight from Melbourne to Perth leaves Melbourne at 5.00 pm local time and arrives in Perth at 7.10 pm local time. If Melbourne is on the 145° E meridian and Perth is on the 115° E meridian, calculate the total journey time.

2 marks

Question 14

The Australian Cricket team is flying from Perth to Johannesburg (South Africa) for a series of matches. Their flight leaves Perth at 6.05 am (local time) and arrives in Johannesburg at 8.50 pm (local time). If Perth is on the 115° E meridian and Johannesburg is on the 28° E meridian, calculate the total journey time.

2 marks

Question 15

Australian Eastern Standard Time (which includes Melbourne and Sydney) is based on the 150° E meridian and New York (USA) time is based on the 75° W meridian. If a flight leaves Melbourne at 10.30 am and arrives in New York at 10.15 pm on the same day, calculate the total journey time.

Question 16

- a. Ken Gourlay arrived in Devonport in May 2007 after sailing solo around the world. At one point in his voyage, his chronometer showed that it was 9:30AM GMT and he observed that the sun was at its highest point in the sky. What was Ken's longitude at this moment?

1 mark

- b. During the final part of his journey, Ken sailed from the position (41°S , 21°E) (near Cape Town, South Africa) **due east** to the position with co-ordinates: (41°S , 143°E) (near Tasmania). Calculate the distance covered in this part of the journey, **to the nearest km**.

3 marks

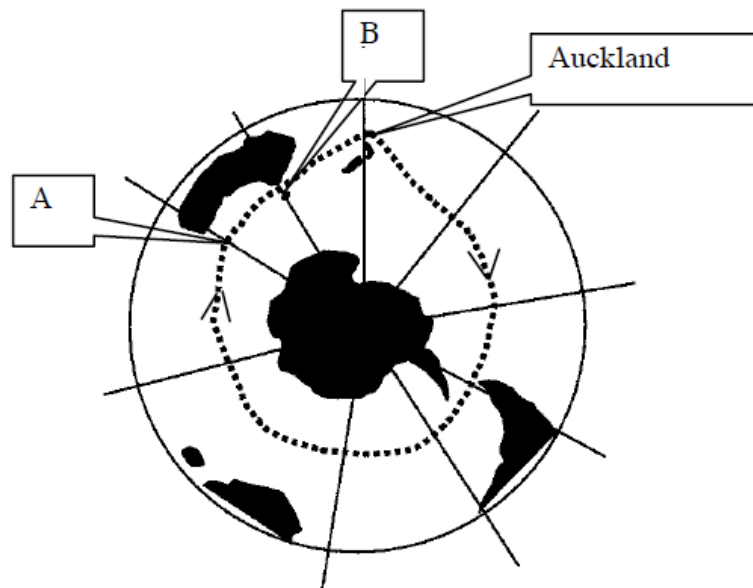
Question 17

Neville departs San Diego (32°N , 117°W) at 10:30 am and flies due east to Dallas (32°N , 97°W).

- a. Determine the distance he flies east, to the nearest km.
- b. If Neville arrives in Dallas at 2:58 pm (Dallas time) on 5 March, how long did his flight take?

Question 18

The *Antarctica Cup* is an ocean yacht race that involves sailing around the Antarctic continent. The race starts and finishes in Auckland (New Zealand) as shown below.



The last two sections of the race takes the boats from point A (40°S , 116°E) **due east** to point B (40°S , 147°E). From point B the yachts head **directly** to Auckland (37°S , 174°E).

- a. Calculate the time difference between:
 - i. Auckland and point B

 - ii. Auckland and point A

2 marks

- b. Calculate the distance in km between point A and B. Give your answer to the nearest km.

3 marks