



-1 notation -1 rounding

Mathematics Essentials 2015

Test 3 Unit 2

Task Weighting: 14%

Student Name: _____

Time Allowed: 50 Minutes

Total Marks: 48

SOLUTIONS

Calculators and files are allowed in this test.

Answer all of the following questions. Show all working to maximise marks.

Question 1 [4 Marks: 2, 2]

a) Convert the following times to 12 hour time

i. 1045 h

10:45 am ✓

must have am

ii. 2331 h

11:31 pm ✓

must have pm

b) Convert the following times to 24 hour time

i. 4:25 p.m.

1625h ✓

must have h

ii. 6:35 a.m.

0635h ✓

(-1 notation)

Question 2 [3 Marks: 1, 2]

a) Vanessa's flight lands in Singapore at 0840. Her next flight leaves Singapore at 1820. How long does Vanessa have in the Singapore airport?

9 hrs 40 mins ✓

b) Peter wants to go for a bike ride which takes 52 minutes. He also wants to watch his favourite television show which starts at 7:35 p.m. What is the latest time that he can leave for his bike ride and be back in time to watch television?

6:43 pm ✓ (must have pm) -1 if not

Question 3 (5 marks – 1, 2, 2)

At Eastern Goldfields College, Period 1 starts at 8:20 am every morning.

- a) If Holly wakes up an hour and a half before school starts, what time does she wake up?

6:50 am ✓

- b) How much time has elapsed from the start of Period 1 to Lunch 2 at 12:45 pm?

4 hrs 25 mins ✓✓

- c) If school finishes at 3:15 pm and Tara starts work 1 hour and 55 minutes later, what time does she begin work?

5:10 pm ✓✓

Question 4 (5 – 1, 1, 1, 2)

- a) Convert this graphical scale into a fractional scale (i. e. 1: 100 000) ✓



- b) 1 cm to 200 m can be written as 1: 20 000 ✓

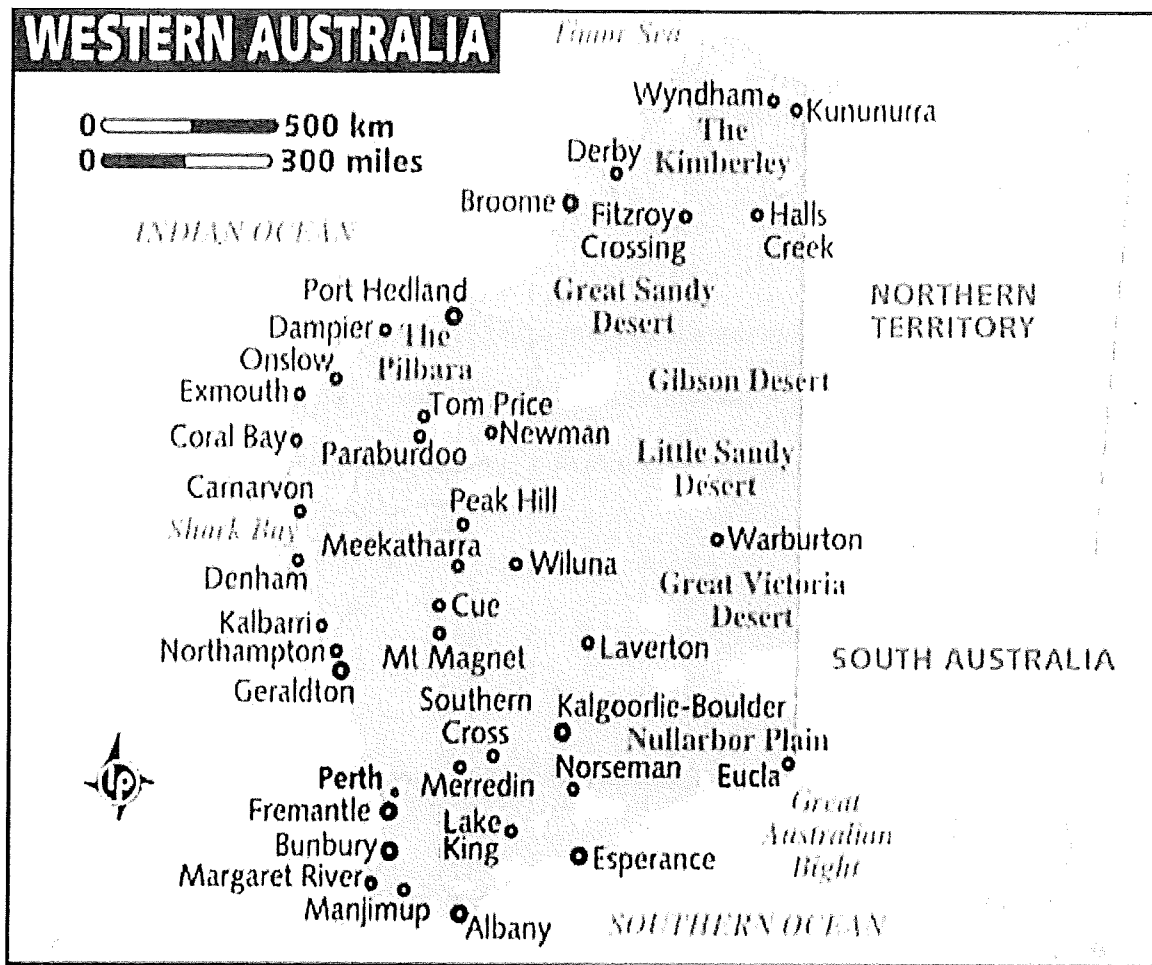
- c) A map scale of 1 : 3000 means 1 cm on the map represents 30 metres in real life ✓

- d) If the length of a room was 5.6 m and the floor plan scale was 1:80, how long would the line be drawn on the plan?

$$560 \div 80 = 7 \text{ cm}$$

✓ ✓

Question 5 [8 Marks – 2, 1, 2, 2, 1]



a) What is the scale? (Write the graphical scale as a fractional scale)

2.3 - 2.4 cm to 500 km

1 cm to 208 km - 217 km

2.3 : 50000000

b) Explain why we would only use the kilometre units provided by the scale.

We don't use miles in Australia (or similar)

1 : 21740000
1 : 20830000 } accept

c) The approximate distance from Perth to Broome is 1680 km. Explain, using the scale and with calculations, how this result has been obtained.

For this scale: 7.8 cm ✓ $7.8 \times \frac{208}{217} = 1700 \sim 1680 \text{ km}$
allow 7.5 - 8.2

d) Use the map to estimate the distance between Albany and Eucla

4.8 cm $\times \frac{208}{217} \sim 1000 \text{ km}$ allow up to 1050 km.

e) Is your answer to d) a good estimate of the road distance between Albany and Eucla? Explain your answer.

No because it is over water (not land).

not roads
as crow flies.

Question 6 (9 Marks: 1, 3, 2, 1, 2)

You are planning a road trip to Broome from Kalgoorlie of 2780 km. We are assuming that you can maintain an average speed of 100 km/h on these roads.

- a) How long will it take to travel this distance? Give your answer in hours correct to 1 d.p.

$$2780 \div 100 = 27.8 \text{ hrs} \checkmark$$

We can assume that a medium sized car uses 9L/100km and a four wheel drive uses 14L/100km and that you will pay around \$1.40 per litre for fuel.

* 9L/100km means for every 100km travelled, the car uses 9 Litres of fuel.

- b) Calculate the cost of your trip using a medium sized car, showing your working.

$$27.8 \times 9 = 250.2 \text{ L} \checkmark$$

$$250.2 \times 1.4 = \$350.28 \checkmark$$

- c) Calculate the cost of your trip using a four wheel drive, showing your working.

$$27.8 \times 14 = 389.2 \text{ L}$$

$$389.2 \times 1.4 = \$544.88 \checkmark$$

- d) What is the difference in cost between using a four wheel drive compared to a medium sized car?

$$\begin{aligned} &544.88 - 350.28 \\ &= \$194.60 \checkmark \end{aligned} \quad \begin{array}{l} (c) - (b) \\ \text{F.T.} \end{array}$$

- e) What percentage is the cost of the medium sized car to that of the four wheel drive? Show your working.

$$\frac{350.28}{544.88} \times 100 = 64.3\%$$

accept 64%

$$\begin{array}{l} (b) \times 100 \\ (c) \text{ F.T.} \end{array}$$

Question 7 [6 Marks – 2, 2, 2]

This is the timetable for the Rottnest Express ferry.

Timetable Travelling to Rottnest Island Friday, October 30, 2015

Boarding Closes	From	To	Remarks
07:15	B-Shed Fremantle	Rottnest Island	Direct service from B Shed to Rottnest
08:30	Barrack St, Perth	Rottnest Island	Service travels from Perth via Northport to Rottnest
10:00	Northport Fremantle	Rottnest Island	Service travels from Perth via Northport to Rottnest
09:30	B-Shed Fremantle	Rottnest Island	Direct service from B Shed to Rottnest
11:30	B-Shed Fremantle	Rottnest Island	Direct service from B Shed to Rottnest
13:45	Northport Fremantle	Rottnest Island	Direct service from Northport to Rottnest
15:15	B-Shed Fremantle	Rottnest Island	Direct service from B Shed to Rottnest
17:45	B-Shed Fremantle	Rottnest Island	Service travels from B Shed via Northport to Rottnest
18:15	Northport Fremantle	Rottnest Island	Service travels from B Shed via Northport to Rottnest

Timetable Travelling from Rottnest Island Friday, October 30, 2015

Boarding Closes	From	To	Remarks
08:25	Rottnest Island	Northport Fremantle	Service travels to B Shed via Northport
08:25	Rottnest Island	B-Shed Fremantle	Service travels to B Shed via Northport
10:40	Rottnest Island	B-Shed Fremantle	Direct service to Bshed
11:40	Rottnest Island	Northport Fremantle	Direct service to Northport
14:10	Rottnest Island	Northport Fremantle	Service travels to B Shed via Northport
14:10	Rottnest Island	B-Shed Fremantle	Service travels to B Shed via Northport
15:55	Rottnest Island	Northport Fremantle	Service travels to Northport, B Shed and Perth
15:55	Rottnest Island	B-Shed Fremantle	Service travels to Northport, B Shed and Perth
15:55	Rottnest Island	Barrack St, Perth	Service travels to Northport, B Shed and Perth
16:25	Rottnest Island	B-Shed Fremantle	Direct Service from Rottnest to Bshed
19:10	Rottnest Island	B-Shed Fremantle	Service travels to Northport via B Shed
19:10h	Rottnest Island	Northport Fremantle	Service travels to Northport via B Shed

All times in Australian Western Standard Time.

<https://www.rottnestexpress.com.au/ferry-timetable>

- a) Pauline hopes to park her car at Northport while she spends the day at Rottnest. Which ferries should she choose to allow maximum time on the island?

10:00am to get there ✓
7:10 pm to get back ✓

- b) Gary intends to catch a bus to Barrack St in Perth to allow him to catch the ferry. Which ferries should he use to allow himself maximum time on the island?

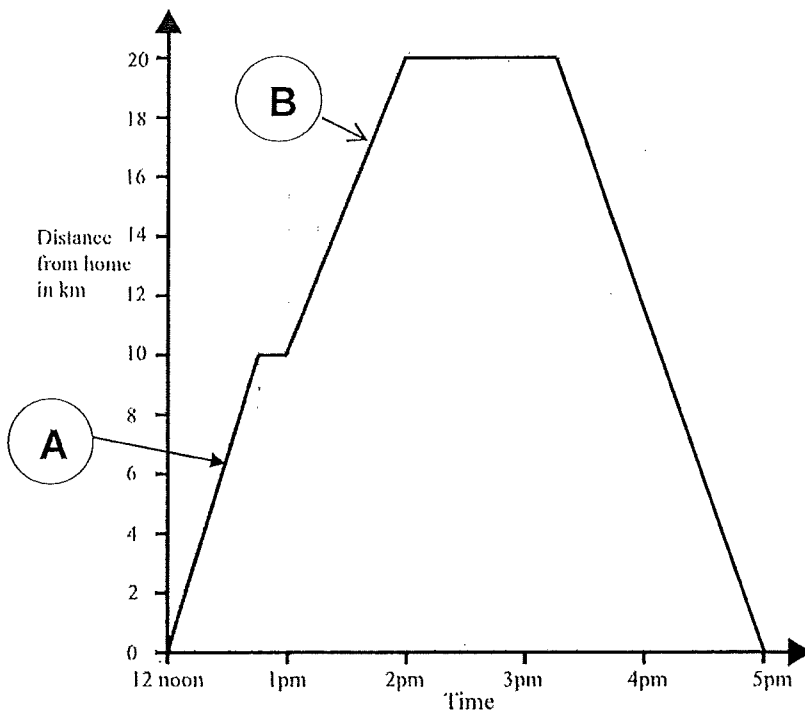
8:30am to get there ✓
3:55pm to get back ✓

- c) Claudia has a dentist appointment at 10am, then plans to go to B shed to catch a ferry. Which ones can she catch to spend the most time on Rottnest?

11:30 am to get there ✓
7:10 pm to get back ✓

Question 8 [8 Marks: 1, 1, 3, 2, 1]

The following graph gives the distance of a cyclist from his home



a) For how long did he rest?

$\frac{1}{2}$ hrs ✓

b) How far away from home was he at 1.30 pm?

15 km ✓

c) Find his speed in kilometres per hour through: (Round answers to 1 d.p. if necessary)

(i) Section A

$$10 \div 0.75 = 13.3 \text{ km/hr} \checkmark \checkmark$$

(ii) Section B

$$10 \text{ km/hr} \checkmark$$

d) What was his 'average' speed for the entire bike ride?

$$40 \div 5 = 8 \text{ km/hr} \checkmark \checkmark$$

e) How can you tell from the graph when the cyclist was travelling most quickly?

It's the steepest part
✓