Mathematics Essentials 2015
Test 3 Unit 2
Task Weighting: 14%

Eastern Goldfields College

Student Name: SOLUTIONS

Time Allowed: 50 Minutes

Total Marks: 48

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 ✓

ii. 6:35 a.m. — 0635h ✓

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?

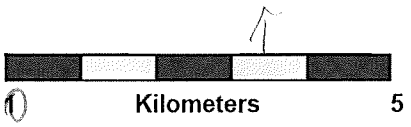
4 hrs 25 mins ✓✓

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: 100000) ✓



increase ↑?

b) 1 cm to 200 m can be written as 1: 20000 ✓

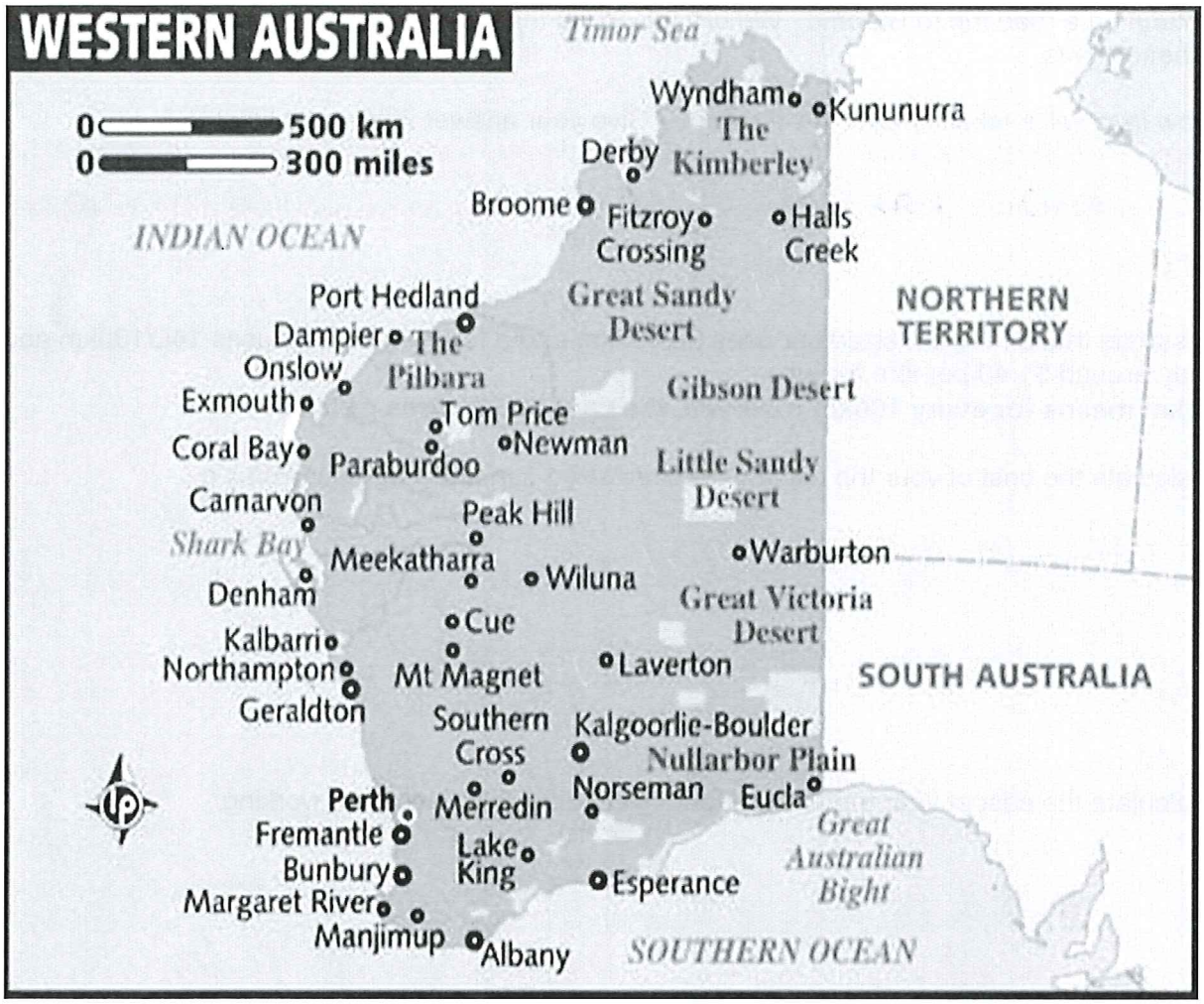
c) A map scale of 1 : 3000 means 1 cm on the map represents 30 ✓ metres in real life

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 ÷ 80 = 7 cm

✓ ✓

Question 5 [8 Marks – 2, 1, 2, 2, 1]



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

2.5cm to 500 km 1cm to ✓ 200km 1 : 20000000 ✓

2.5 : 50000000

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

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

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

8.5cm ✓ 8.5 x 200 = 1700 ✓ ~ 1680km.

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

5cm ✓ x 200 = 1000 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. 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.

PERTH → BROOME

1680 ÷ 100 = 16.8 hrs ✓

OR 1700 ÷ 100 = 17.0 hrs

KALGOORLIE → BROOME

1480 km ÷ 100 = 14.8 hrs

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.

16.8 x 9 ✓ = 151.2L ✓

f.t. from (a) 151.2 x 1.40 = $211.68 ✓

OR 14.8 x 9 = 133.2L x 1.4 = $186.48

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

16.8 x 14 = 235.2L ✓

235.2 x 1.4 = $329.28 ✓

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

329.28 − 211.68

= $117.60 ✓

(c) − (b)

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

$\frac{211.68}{329.28}$ x 100 = 64.32

✓ ✓

accept 64 %

F.T.

$\frac{(b)}{(c)}$ x 100.

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 ✓
7:10pm 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?

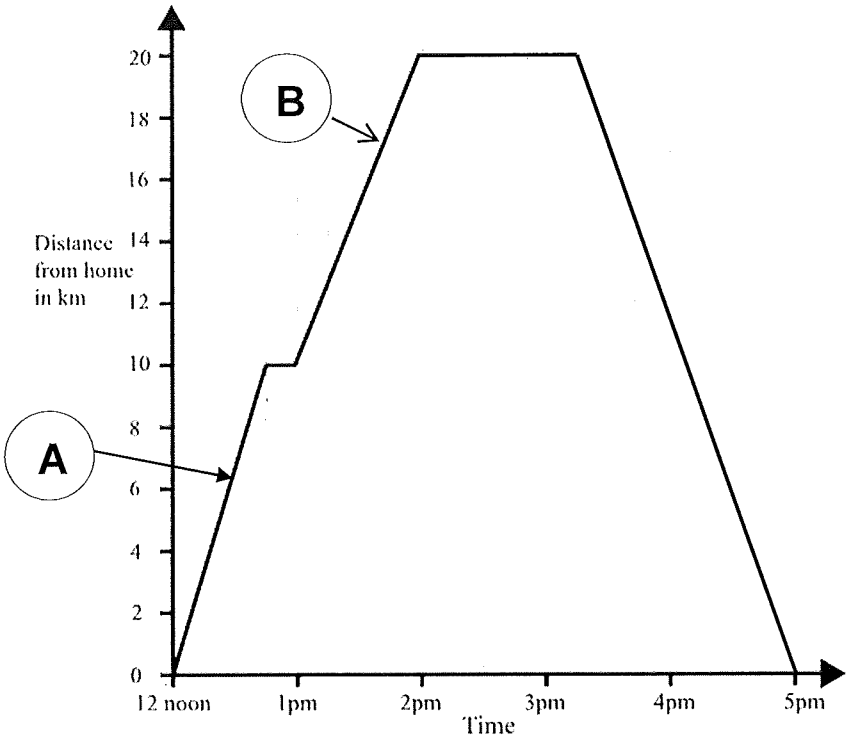
8:30am to get there ✓
3:55pm to get back ✓

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?

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

Question 6 [8 Marks: 1, 1, 3, 2, 1]

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



a) For how long did he rest?

1½ 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

$10 \div 0.75 = 13.3$ km/hr ✓✓

(ii) Section B

10 km/hr ✓

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

$40 \div 5 = 8$ km/hr ✓✓

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

It's the steepest part ✓