|  |  |
| --- | --- |
| EGC_Black | Student Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    **Eastern Goldfields College**  Mathematics Essentials 2017  Investigation 6 – Getting to the Grand Final  1 |

Notes and Calculator Allowed **TIME:** 90 min  **TOTAL MARKS**: 63

This investigation is worth 7.5% of your semester mark.

**Equipment needed**: calculator, notes, ruler, plain paper for working.

Your AFL football team, finished in the top 4 this season. You decide that you and a friend want to get to Melbourne and the MCG to watch the Grand Final next year on Saturday, October 2, 2016. It is a once in a lifetime special weekend, so you are budgeting up to $4 500 per person. You plan to fly Friday **morning**, October 1, 2016 and return on Sunday afternoon, October 3, 2016. Organisation and choices to be made before bookings can be completed.

**FLIGHTS  
Question 1 (25 Marks: 12, 10, 3)**

Review the return flight options available on the information package provided. There are 2 Qantas and 2 Virgin options.

COST – accept cost for 2 if **clarified**

**NOTE:** All of the times listed on the flights are Western Australia Times.

Choose 2 possible flight options from the 4 provided on the information sheet.

** r/w**

Data Entry  
(all correct)

*a) Travelling from Kalgoorlie to Melbourne*

** r/w**

** r/w**

** r/w**

**CHOICE 1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| QF1607 | Kal | 8:55am | 0855 | Perth | 10:10am | 1010 | 1h15m+  5h30m  6h 45m | $687  Or  $1841 |
| QF476 | Perth | 1:55pm | 1355 | Mel | 7:25pm | 1925 |

Was there a stop-over for this flight? See you information package for stop-over information. Yes / ~~No~~

****

If yes, how long will the wait be in hours and minutes between flights? \_\_3h 45min\_\_\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_10h 30 min \_\_\_****

**CHOICE 2**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| QF1609 | Kal | 2:25pm | 1425 | Perth | 3:40am | 1540 | 1h15m+  5h30m  6h 45m | $687  Or  $1841 |
| QF768 | Perth | 5:00 pm | 1700 | Mel | 10:30pm | 2230 |

Was there a stop-over for this flight? Yes / ~~No~~

-1 as not an am flight

If yes, how long will the wait be in hours and minutes between flights? \_\_\_1h 20min\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_\_8h 5 min\_\_\_\_\_\_

**CHOICE 3**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| VA1851 | Kal | 12:55pm | 1255 | Mel | 4:05pm | 1605 | 3h10m | $355 OR $619  Or  $1692 |
|  |  |  |  |  |  |  |

Was there a stop-over for this flight? ~~Yes~~ / No

-1 as not an am flight

If yes, how long will the wait be in hours and minutes between flights? \_\_\_0\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_\_3h10m\_

**CHOICE 4**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| VA1852 | Kal | 8:50am | 0850 | Perth | 10:05am | 1005 | 1h15m+  4h20m  5h 35m | $439 or $679  Or  $1749 |
| VA690 | Perth | 1:30pm | 1330 | Mel | 5:50pm | 1750 |

Was there a stop-over for this flight? See you information package for stop-over information. Yes / ~~No~~

If yes, how long will the wait be in hours and minutes between flights? \_\_3h 25min\_\_\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_9h \_\_\_

***b) Travelling from Melbourne to*** *Kalgoorlie* **No Mark for Data Entry, but -1 if data   
 entered incorrectly**

** r/w**

** r/w**

** r/w**

**CHOICE 1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| QF769 | Mel | 12:05pm | 1205 | Perth | 4:20pm | 1620 | 4h15m+ 1h 5m  5h 20m | $811  Or  $2176 |
| QF1890 | Perth | 5:00pm | 1700 | Kal | 6:05pm | 1805 |

Was there a stop-over for this flight? Yes / ~~No~~

****

If yes, how long will the wait be in hours and minutes between flights? \_\_\_\_40 min\_\_\_\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_\_6 h\_\_\_\_\_\_\_****

**CHOICE 2**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| QF475 | Mel | 7:25am | 0725 | Perth | 11:40am | 1140 | 4h15m+ 1h 5m  5h 20m | $811  Or  $2176 |
| QF1890 | Perth | 5:00pm | 1700 | Kal | 6:05pm | 1805 |

Was there a stop-over for this flight? Yes / ~~No~~

If yes, how long will the wait be in hours and minutes between flights? \_\_\_5h 20min\_\_\_\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_10h 40min\_\_\_\_\_

**CHOICE 3**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| VA1860 | Mel | 6:30 pm | 1830 | Kal | 9:45pm | 2145 | 3h15m | $355 or $619  Or  $1692 |
|  |  |  |  |  |  |  |

Was there a stop-over for this flight? ~~Yes~~ / No

If yes, how long will the wait be in hours and minutes between flights? \_\_\_0\_\_\_\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_3h 15min\_\_\_\_\_

**CHOICE 4**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Flight  Number(s) | Departure | | | Arrival | | | Flight | |
| City | Time | | City | Time | |
| 12 h | 24 h | 12 h | 24 h | Length | Cost |
| VA679 | Mel | 8:50am | 0850 | Perth | 12:10pm | 1210 | 3h20m+ 1h 5m  4h 25m | $432 or $672  Or  $1742 |
| VA1855 | Perth | 5:05pm | 1705 | Kal | 6:10pm | 1810 |

Was there a stop-over for this flight? Yes / ~~No~~

If yes, how long will the wait be in hours and minutes between flights? \_\_\_4h 55min\_\_\_\_\_\_\_

What is the total length of journey in hours and minutes? \_\_\_9h 20min\_\_\_\_\_

1. Which flight is the best option for getting to Melbourne. Give two reasons why.

**1-Mark – flight chosen**

+

**1 mark per each valid reason – to a max 2 marks. 3 in marks total for question.**   
Any valid 2 reasons that either : suit the options they provided**; OR** all 4 options

Eg:

* Total length of journey – i.e. shorter
* Departure / arrival times i.e. leaves in the am as planned OR arrives at a reasonable hour
* Cost i.e. cheaper

FT – if errors in their tables

***1mark only -*** If students chose a Melboure to Kalgoorlie flight – this is incorrect. However, if Flight Chosen **PLUS** reason is correct then pay **1 mark only**.

**ACCOMMODATION**

**Question 2 (17 marks: 1, 5, 4, 2, 3, 2)**

Both you and your friend will share a hotel room. Whichever hotel and room option you choose, you will be able to request either a bed to share, or 2 singles. You have a choice of 2 hotels in Melbourne, they are.

* **Rydges** Melbourne located at the *corner* of Exhibition St and Lt Bourke Street, Melbourne VIC.
* **Crown Towers**, also known as *Crown Promenade* located at the *corner* of Whiteman St and George/Market St, Southbank VIC.

Information about these two hotels is located in your information package.

1. Use the key and the addresses listed above to assist you in locating the two hotels on the map provided.   
   * Rydges is located at map co-ordinates: M7/M6 mark
   * Crown Towers is located at map co-ordinates: G15 mark
2. You have decided to avoid the crowds and walk to the Melbourne Cricket Ground (MCG) for the grand final from your hotel. The MCG is located at map co-ordinates, U14.

For each hotel, decide the path you could walk and the distance. Measure to the South West entrance of the MCG, located near the end of the bridge over Brunton Ave.

****

**Rydges**

Path:

Any valid path, that YOU can follow IF you WALKED the streets with these directions & no map; AND directions are correct i.e. Turn Left / Easterly; Turn right / westerly; down / south; up / north until you hit/reach Xyz street. Etc.

****

Measured correctly (allow 1 cm error either side of what you measured)

Walking Distance: Measure their route and x.y cm X 90 = m

****

Answer (follow through error)

Approx14.6 cm (1.3 km)Conversion

****

**Crown Towers/Promenade** Path

Path (Hint: use the Flinders Walk, walkway):

If used hint: North/up on George/market street crossover street at Southbank Promenade and go onto Flinders walk and follow it all the way to the end at MCG.

Measured correctly (allow 1 cm error either side of what you measured)

CANNOT just state *use Flinders Walkway* must specify  
with detail.

Walking Distance: 17.4 cm X 90 = 1566m = 1.566 km

****

Answer (follow through error)

Conversion

1. The average person walks at 5 km / h. Using the average walking speed, calculate the time it would take the average person to walk:

* From Rydges to the MCG (show working)

****

Their answer above converted to km ÷ 5 =

****

X result by 60 min = answer F.T.

* From Crown Towers to the MCG (show working)

1.566 km ÷ 5 = 0.3132 X 60min = 18.792 min ≈ 19 min

Use their answer from (b)

****

****

F.T.

1. Review the information package about each hotel and your answers for question 2 above and choose which hotel you will book and explain the reason for your choice.  
     
    hotel choice valid reason e.g: look nicer, cheaper in cost, closer   
    (less distance to walk), close to casino,

****

****

Closer to city centre & shopping, etc.

** r/w**

1. Cost of stay
   * How many nights will you be staying at the hotel? \_\_\_2\_\_\_\_\_\_\_
   * Describe the package you have chosen.  
     Rydges:

** r/w**

Best flexible Rate $399 per night for 2 ppl. OR I am a member, so $359  
OR

Best & Breakfast $443 per night for 2 ppl. OR I am a member, so $395

OR

Dinner & Breakfast package $529 per night for 2 ppl. OR I am a member, so $476

Crown Promenade

Web Rate for 2 ppl for 2 nights - $848

If number of nights incorrect above, F.T. error

* + What is the total cost of staying at this hotel?

** r/w**

Rydges:

2 x $399 = $798. OR 2 x $359 = $718  
OR

2 x $443 = $886 OR 2 x $395 = $790

OR

2 x $529 = $1058 OR 2 x $476 = $952

Crown Promenade

$848

1. The AFL Grand Final is set to start at approximately 2:20 pm. You want to arrive 1 hour and 15 min before the game to enjoy the pre-game activities.

** r/w**

* + What time do you want to arrive at the MCG?

1:05 pm OR 1305

* + Using your answer from part c) what time do you need to leave your hotel to arrive at this time?

** r/w**

Use their answer from part 2(c)

1:05pm – their answer (e.g. 19min) = 12:46 pm

If 12:46pm is their correct answer and they then state *So, I would leave at 12:45 just in case I walk a bit slow or crowd, etc. As long as it is valid mathematically reasoning.*   
OR student states  *approx –(time)- and time is before min leaving time* – pay as correct

OR student states  *about/rougly/etc –(time)- and time is before min leaving time* – pay as correct

**PUBLIC TRANSPORT**

**Question 3 (8 marks: 3, 1, 2, 1, 1)**

Now that you have planned your flights and accommodation, you now need to determine how you travel from the airport to your hotel.

There are two public transport options available, Taxi or Sky Bus.

1. Taxi services in Melbourne all follow a set rate. This rate is provided in your information package.   
   The distances from the airport to each hotel is as follows:
   * Airport to Rydges is 23.977 km
   * Airport to Crown Towers / Promenade is 25.677 km

Calculate the cost of a taxi to travel from the Melbourne airport to your hotel, rounding your answer to the nearest dollar. Show all working. Use the formula F = 2 + 3.2 + (D x C) where:

F = Total cost of Fare D = Distance Travelled C = Cost per Kilometre

Rydges:

****

****

****

F = 2 + 3.2 + (23.977 x 1.617) = $ 43.9708 ≈ $44

Crown:

F = 2 + 3.20 + (25.677 x 1.617) = $ 46.7197 ≈ $47

1. Your arrival time into Melbourne is in Western Australian time. Due to time zones, Melbourne, Victoria is 2 hours ahead of WA. This means you add 2 hours to your arrival time and that is the time in Melbourne.

** r/w**

What is your arrival time into Melbourne, in Melbourne time? write correct time for their chosen flight

1. Sky bus services is an express bus from the Airport to the City Centre, return. For more information, see your information package.

* Review your flight information and assume you have to wait 30 min for your luggage, choose a suitable Sky Bus, departure time.

** r/w**

Use answer from 3 (c) + 30 min & have chosen next available bus

* How long will you have to wait, in minutes, from the end of your flight to the Sky Bus departure time?

** r/w**

Use answer from 3 (c) + 3 (d) and calculation is correct

1. Calculate the cost of travelling from the airport to your hotel, using the Sky Bus.

** r/w**

$18

If state $36, then MUST specify for 2 ppl.

1. Which mode of transport will you choose and why?

Answer valid / reasonable answer for their choice.

e.g. Taxi is not that much more expensive, and takes me straight to motel where skybus I have to change buses.

** r/w**

OR Skybus as it is cheaper. ETC

**GAME PACKAGES**

**Question 4 (1 mark)**

$1600 - This package includes: breakfast (9:30 am, at the   
 ANZ stadium), guest speakers, premium seat for the   
 game.

$550 - Premium Ticket Entry

$200 - Standard Ticket Entry

Which game package option will you choose? Chose a package from above

** r/w**

**BUDGET / COSTS**

**Question 5 (8 marks: 3, 2, 1, 2)**

1. Complete the table below and determine the total cost for both you and your friend to travel and stay at Melbourne for the AFL Grand Final next year.

|  |  |  |
| --- | --- | --- |
| **Item** | **Cost Each** | **Total Cost** |
| Flights to Melbourne and return | Total their answers | Cost Ea X 2 |
| Accommodation | Tot Cost ÷ 2 | Q2 (e)(iii) answer |
| Public Transport from Airport to Hotel and return | Taxi = Tot Cost ÷ 2  Sky Bus = $36 | Q3 Answer |
| Game Package | Q4 Answer | Cost Ea X 2 |
| **TOTAL COST**  -1 any errors  **** | Cost Each Total = Total Cost Total ÷ 2 | Total Cost = Cost Each Total X 2 |

1. Both you and your friend have $4,500 each to spend on this trip. Do you have enough money to cover flights, accommodation, game package and public transport to and from the airport? Justify your answer (show all working).

****

Yes / No – enough money (as per their answers)

****

Justification – using correct maths $4500 – Cost Each Total = $\_\_\_\_\_   
 Cannot just state less than or greater than **must use numbers**

1. List one option you could you do to reduce your overall costs for this trip?

Any valid answer eg:

* Cheaper flights – fly flexi instead of business ( not ‘search for cheaper flights’ – need specific)

Must be specific.

Cannot state ‘*pick cheaper options’*

* Cheaper hotel, eg. Rydges basic option is cheapest

****

* Cheaper rate option at same hotel, that is buy own breakfast &/or dinner.
* Skybus instead of Taxi
* Cheapest Ticket entry
* etc

1. List 2 other expenses, not listed above, that you would also need to budget for?

* Food

****

****

* Shopping
* Sight seeing
* Any 2 valid reasons.

**DAILY SCHEDULE**

**Question 6 (5 marks)**

Create a schedule of events for your entire trip. Ensure you include each of the following:

* Day
* Event (flight, hotel, grand final)
* Time - Arrival time **and** Departure time for every event
* Assume
  + it takes 1 hour to travel between airport and your hotel (using either taxi or Sky bus)
  + you need to be at the airport 1 hour before your flight

**5 marks**

Must clearly identify/see :

* 100% correct
* Friday, Saturday & Sunday headings
* Flight departure from Kal & arrival to Perth + Perth departure & arrival to Mel  
  OR

Flight departure from Kal & arrival directly to Mel AS PER STUDENTS CHOICES

* Transport mode times   
  Taxi – landing time + 30min waiting for luggage (can allow time for walking to taxi, but if have +30 after landing this is enough)
* Approx arrival time at hotel
* Leave time to arrive at MCG AS PER STUDENTS CHOICES
* Do not worry over arrival time back at hotel, if given it – only deduct if unreasonable
* Leave time (ignore early/late checkout of motel this wasn’t given to students)   
  AS PER STUDENTS CHOICES if taxi – approximate leave time and reasonable to get their 1 hour before their flight. So if < 30 min taxi travel time not reasonable so deduct mark
* Flight departure from Mel & arrival to Perth + Perth departure & arrival to Kal  
  OR

Flight departure from Mel & arrival directly to Kal AS PER STUDENTS CHOICES

* Don’t stress over getting home, as wasn’t apart of project.

**4 marks**

Must clearly identify/see :

* 100% correct
* Exactly same as 5 marks **except** doesn’t mention time zones.

**3 marks**

Must clearly identify/see :

* Days
* Events
* Times – arrival & deapartures AS PER STUDENTS CHOICES
* Some minor errors

**2 marks**

You are able to follow what they have :

* AS PER STUDENTS CHOICES
* Has errors

**1 mark**

Reasonable attempt made – totally wrong &/or cannot follow

**0 marks**

No reasonable attempt made