

# College ABCD

## Investigation

Assessment Period:	2022 S2
Course:	ESSENTIAL MATHEMATICS
Unit:	Unit 2: Essential Mathematics (1.0)
Accreditation:	A
Weight:	25%
Maximum Mark:	79
Due Date:	01 Aug

### Assessment Conditions

The task is to be completed in class and at home. It should be completed and submitted electronically no later than 3:30 PM on the due date, through the school LMS with the declaration of own work form attached.

### Additional Information

#### Assessment Criteria

Students will be assessed on the degree to which they demonstrate

- *Concepts and Techniques* - knowledge of mathematical facts, techniques and formulae presented in the unit. Appropriate selection and application of mathematical skills in mathematical modelling and problem solving.
- *Reasoning and Communication* - ability to use reasoning to support solutions and conclusions. Interpretation and communication of mathematical ideas in a form appropriate for a given use or audience.

#### Student Feedback

Verbal and/or written feedback will be given within two weeks of submission

#### Instructions

- Write your name and your teacher's name on each page submitted.
- Answer all questions, labelling each clearly.
- Show all working, as part marks may be awarded, where sufficient demonstration of your understanding is evident.
- Leave answers in exact form unless otherwise stated.
- Write in blue or black pen only. Sketch all graphs using a pencil and a ruler, showing appropriate features.
- If your work is word processed, ensure correct mathematical notation is used e.g. MS equation editor

## **Other Applicable Policies**

BSSS and School policies on academic integrity and on penalties for late submission, as noted on the unit outline, apply.

### **For penalties for late and non-submission of work**

Review [BSSS Policy and Procedure Manual 4.3.10](#) for more details.

### **For academic integrity**

Review [BSSS Policy and Procedure Manual 4.3.12](#) for more details.



## **Task Description:**

You are to plan a trip for you and a friend to have a picnic at one place of significance to Indigenous Australians in Sydney on Saturday 8<sup>th</sup> October 2022.

You will start from a place assigned to you by your teacher.

Write down the **starting place** your teacher has assigned you here:

Starting Places for teacher to choose from:	
Tuggeranong, ACT	Scone, NSW
Gungahlin Place, ACT	Ulladulla, NSW
Centre of Orange, NSW	Mudgee, NSW
Goulburn, NSW	Bathurst, NSW

You need to plan to have your packed picnic for 1 hour sometime between 11:00am-2:00pm at one of the following places of significance for Australia's Aboriginal and Torres Strait Islander people:

- Ku-Ring-gai Chase National Park
- Obelisk Bay
- Dharug National Park
- Longueville Park

Write down the **picnic place** you have chosen here:

Be sure to include in your submission why this place is of significance and what you might expect to see there.

You should look to also visit at least 3 other points of interest during your one-day trip for example, Luna Park, Bondi Beach.

Write down the other 3 point of interest you are interested in visiting in your trip:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

For your trip you will need to show 2 different travel options in your submission. One option will be primarily private vehicle. The other option will be primarily public transport.

You will need to provide an itinerary for **each** option and keep track of the costs. You must consider all cost of travel from door to door including toll costs, parking costs, travel costs, tickets costs, etc.

You will submit a two-page (minimum) report containing:

- An **itinerary**
  - Times and locations of departure and arrival for each leg (with print out of timetable)
  - Time spent travelling each leg
  - Appropriate time spent visiting each point of interest
  - Total time for the journey including visiting points of interest and waiting between legs
  - Route or platform/dock numbers **etc** where relevant
- A series of detailed **maps** for each transportation option showing
  - Key
  - Scale
  - Exact route taken
  - At least 4 points of interest in total
- A **comparison** of the transportation options analysing
  - Cost
  - Total time travelling
  - Distance travelled
  - Average speed
  - Convenience
  - Which Mode of Travel Will you choose? Explain your answer with **mathematical reasons**.
- **Safety:** Comment on 4 safety considerations such as:
  - Driver fatigue (where and when will you rest?)
  - When will it get dark and where will you be when it does?
  - Is there anything that might leave you waiting for transportation?
  - Do any transportation options require additional equipment or supplies?
- **References:** You must provide a comprehensive list of websites used to find all the information you used in your submission.
- **Reflection:** You must provide a reflection detailing your own thinking and learning, how you managed your time, use of strategies that worked for you in organising your resources, use of strategies used that helped you to work through the mathematics of this assignment.

The option for students to work to an A grade response on **ITINERARY** depending on the criteria outlined in the rubric. CT2 RC2

communicates mathematical information in oral, written and/or multimodal forms, which are well reasoned, using accurate and appropriate language

select and applies mathematical techniques to solve routine and non-routine problems in a variety of complex contexts

The option for students to work to a B grade response in the Map section depending on the criteria in the rubric CT3

uses digital technologies effectively to solve routine and non-routine problems in a variety of contexts

Students can respond to Comparison at an A grade level.

CT2, RC2, CT3

select and applies mathematical techniques to solve routine and non-routine problems in a variety of complex contexts

communicates mathematical information in oral, written and/or multimodal forms, which are well reasoned, using accurate and appropriate language

uses digital technologies effectively to solve routine and non-routine problems in a variety of contexts

Students can respond to this at an A grade level and reflect on my safety is important.

RC4

evaluates the potential of Mathematics to generate knowledge in the public good

Students can respond to References at a B grade level and provide appropriate websites and snips used for the assessment task CT3

uses digital technologies effectively to solve routine and non-routine problems in a variety of contexts

Students can reply to the Reflection at a B grade level  
RC3

reflects with insight on own thinking and learning, evaluates planning, time management, use of appropriate strategies to work independently and collaboratively.

The following table will help build your itinerary:

	Private vehicle	Commercial transport
<b>When will you leave?</b>		
<b>Time spent Travelling</b>		
<b>Time spent waiting between legs</b>		
<b>Fuel used/cost</b>		
<b>Rest breaks / food and water stops</b>		
<b>Route numbers, Bus numbers, etc</b>		
<b>Parking (where and how much)</b>		
<b>Ticket prices</b>		
<b>Advantages</b>		
<b>Disadvantages</b>		

## Itinerary

Description	5 (A grade)	4 (B grade)	3 (C grade)	2 (D grade)	1 (E grade)	0
Times and locations of departure and arrival for each leg (screen shot or print out of timetables)	All departure and arrival locations and times for all legs are correctly listed and accompanied with correct timetables.	All departure and arrival locations and times for all legs are listed with only one or two errors and accompanied with correct timetables.	All departure and arrival locations and times for all legs are listed with only more than two errors and accompanied with correct timetables.	All departure and arrival locations and times for all legs are correctly listed but not accompanied with correct timetables.	Multiple departure and arrival locations and times incorrect and not accompanied with correct timetables.	All departure and arrival locations and times are incorrect or not provided
Time spent travelling	Correctly calculate the time spent travelling for all legs for the two transportation options	Calculate the time spent travelling for 2 of the transportation options with a minor error.	Correctly calculate the time spent travelling for 1 of the transportation options	Minor errors made calculating the time spent travelling in all of the transportation options	Multiple or major errors made in calculating the time spent travelling in all of the transportation options	Time spent travelling not completed or with multiple major errors
Total time for the journey including waiting between legs	Correctly identified the time spent waiting between legs and added to correct travel time	Correctly identified the time spent waiting between legs but added to incorrect travel times	Correctly calculated the time spent waiting between legs for 2 of the transportation options	Correctly calculated the time spent waiting between legs for 1 of the transportation options	Errors in calculating the time spent waiting between legs for all of the transportation options	Time spent waiting between legs not included in report
Safety	Identified a minimum of 4 valid safety considerations and provided methods to mitigate risk for these considerations	Identified 3 valid safety considerations and provided methods to mitigate risk for these considerations	Identified 2 valid safety considerations and provided methods to mitigate risk for these considerations	Identified 2 valid safety considerations without mention of methods to mitigate risk for these considerations	Identified 1 valid safety considerations and provided methods to mitigate risk for this consideration	Did not show evidence of safety considerations
Route or platform/dock numbers etc where relevant			All docks and platforms are correctly listed	All except one or two docks and platforms are listed	All docks and platforms are listed but not supported by documents	Docks and platforms are not listed
Place of Indigenous Importance			Place of Indigenous Importance is identified and an explanation of what you are likely to find here is explained in the submission and why this place is significant to Indigenous people is discussed.	Place of Indigenous Importance is identified with an explanation of what you are likely to find here. No explanation as to why this place is important to Indigenous people.	Place of Indigenous Importance is identified but no explanation of what you are likely to find here nor an explanation as to why this place is important to Indigenous people.	No place of Indigenous Importance is mentioned in the itinerary nor discussed at all.
Links to Achievement Standards	Concepts and Techniques 2, Reasoning and Communications 2, Reasoning and Communications 4					
Comment						

## Maps

Description	3 (B grade)	2 (C grade)	1 (D grade)	0
Keys	Maps contain a key that identifies each leg of each transportation option and is clear and easy to understand.	Maps contain a key that identifies each leg of each transportation option but is not clear or easy to understand.	Maps contain a key but is missing at least one leg of a transportation option.	Key not included
Scale	Maps show, in detail, the whole journey with the scale of each section clearly shown.	Maps show, in detail, the whole journey with the scale of at one or two sections missing.	Maps use the same scale for the whole journey and lack detail.	Maps missing scale or not drawn to scale.
Exact route taken	Maps identify the entire journey taken and show all key parts of the journey using an appropriate scale to show detail.	Maps identify the entire journey taken although some details of the journey are unclear due to lack of detail in maps.	Maps identify the majority journey taken in detail, with some sections of the journey missing.	Map does not clearly give detail of the exact route taken
Visits points of interests	Map shows the route visiting the 4 in total points of interest.	Map shows the route visiting only 3 points of interest.	Map shows the route visiting only 2 points of interest.	Map does not show the route visiting any points of interest
Links to Achievement Standards	Concepts and Techniques 3, Reasoning and Communications 2			
Comment				

## Comparison of travel options

Description	5 (A grade)	4 (B grade)	3 (C grade)	2 (D grade)	1 (E grade)	0
Cost	All calculations for cost of both transportation options correct, with evidence of costing submitted and compared cost with all other transportation options.	Calculations for cost of both transportation options present with minor omissions, evidence of costing submitted, and costs compared with other all transportation options.	Calculations for cost of both transportation options present with multiple minor errors or omissions, evidence of costing submitted, and costs compared with all other transportation options	Calculations for cost of 1 transportation option submitted with only minor omissions, evidence of costing submitted. Not compared with other transportation options	Calculations for cost of 1 transportation option submitted with only minor omissions and evidence of costing submitted. Not compared with other transportation options	Major errors and/or omissions in cost calculations or not included. No evidence of costings included
Distance	All calculations for total distance travelled for both transportation options correct and compared total distance travelled with all other transportation options.	Calculations for total distance travelled of both transportation options present with minor errors/omissions. Total distance travelled compared with other all transportation options.	Calculations for total distance travelled of both transportation options present with multiple minor errors/omissions. Total distance travelled compared with other all transportation options	Calculations total distance travelled of 21 transportation options submitted with only minor errors/omissions. Not compared with other transportation options	Calculations for total distance travelled of only 1 transportation options submitted with only minor omissions.	Major errors in total distance travelled calculations or not included.
Travel time	All calculations for total time of both transportation options correct and compared total time with all other transportation options.	Calculations for total time of both transportation options present with minor errors. Total time compared with other all transportation options.	Calculations for total time of both transportation options present with multiple minor errors. Total time compared with other all transportation options	Calculations total time of 1 transportation options submitted with only minor errors. Not compared with other transportation options	Calculations for total time of only 1 transportation options submitted with only minor errors.	Major errors in total time calculations or not included.
Speed	All calculations for average speed of both transportation options correct and compared average speed with other transportation options.	Calculations for average speed of both transportation options present with minor errors. Average speed compared with other transportation options.	Calculations for average speed of both transportation options present with multiple minor errors. Average speed compared with other transportation options	Calculations for average speed of 1 transportation options submitted with only minor errors. Not compared with other transportation options	Calculations for average speed of only 1 transportation options submitted with only minor errors.	Major errors in average speed calculations or not included.
Convenience			Analysed the convenience of both transportation options and compared the advantages and disadvantages of each option.	Analysed the convenience of both transportation option but did not compare the advantages and disadvantages of each option.	Analysed the convenience of only one transportation option.	Did not analyse or compare the convenience of transportation options.
Safety			Compared the safety of both transportation options in detail identifying strengths and weaknesses	Compared the safety of both transportation options but had minor omissions	Compared the safety of only one transportation options.	Comparison of the safety of transportation options not included
Mathematical Reasoning			Detailed, clear, concise and correct working to support all calculations	Detailed, clear and concise working that correctly supports most calculations	Minimal working shown	Working not shown to support findings
Links to Achievement Standards	Concepts and Techniques 2, Concepts and Techniques 3, Reasoning and Communications 2					
Comment						

### References:

References:	3 (B grade)	2 (C grade)	1 (D grade)	0
Variety & information gained	A variety of websites shown with a brief explanation of what information you found there to aid the completion of the submission	A variety of websites shown only.	Few websites indicated	No websites listed.
Links to Achievement Standards	Concepts and Techniques 3			
Comment				

### Reflection:

Reflection	3 (B grade)	2 (C grade)	1 (D grade)	0
Explain your own thinking and learning	Reflects on own thinking and learning and communicates this effectively providing 3 or more examples	Reflects on own thinking and learning providing 2 examples	Reflects on own thinking and learning providing 1 example	Possible reflection of thinking and learning provided and no examples
Explain use of time and resources	Reflects on good time management and resources effectively providing 3 or more examples	Reflects on time management and resources providing 2 examples	Reflects on time management and resources providing 1 example	Possible reflection of time management and resources and no examples
Use of strategies	Details use of appropriate strategies to work independently providing 3 or more examples	Details use of strategies to work independently providing 2 examples	Details use of strategies to work providing 1 example	Possible details of strategies to complete work and no examples
Links to Achievement Standards	Reasoning and Communications 3			
Comment				

Overall Score	Overall Grade
out of 79	

## B Grade Example Assignment

Travelling from Wagga Wagga, NSW train/bus station to Canberra, ACT to visit

- 1) Reconciliation Place
- 2) Questacon
- 3) National Museum of Australia
- 4) Paddle boat ride on Lake Burley Griffin

Public Transportation Option Itinerary		
Depart Wagga Wagga Arrive Canberra West Row St	7:00am -10:25am 262 km Average Speed 76.68 km/hr  $262 \div 3 \frac{25}{60} = 76.84 \text{ km/h}$	\$25.73
Get off bus find Beam Scooter to travel to Reconciliation Place ** Be sure to use Helmet with Scooter	115 mins (3 km)  10:40am	\$7.75
Spend 1 hour in Reconciliation Place having a packed picnic and enjoys artworks	10:40am - 11:40am	
Travel to Questacon Spend 1 hour investigating Questacon	1 minute travel (44m) 1 hour Depart 12:41pm	\$24.95 per person
Travel from Questacon to National Museum of Australia ** Be sure to use Helmet with Scooter  Spend 1 hour investigating National Museum of Australia	15 minutes (3.3 km) 1 hour Depart 1:56pm	Scooter fee \$7.75
Travel from National Museum of Australia to Capital Paddle ** Be sure to use Helmet with Scooter ** Be sure to wear a life jacket while on water.	10 minutes travel (2.3 km) 1 hour on the lake Depart 3:06pm	\$35
Travel from Capital Paddle to Canberra Centre ** Be sure to use Helmet with Scooter  Have afternoon tea in or around Canberra Centre and do some shopping	10 minutes (2 km) Arrive 3:16pm  1 hour 44 minutes  Depart Canberra Centre 5:00pm	Scooter Fee \$5.50  Budget \$100 for Lunch and some shopping
Walk from Canberra Centre to West Row Bus stop for trip back to Wagga Wagga	10 minute walk (450 m) Wait for bus Depart 5:25pm	\$25.73

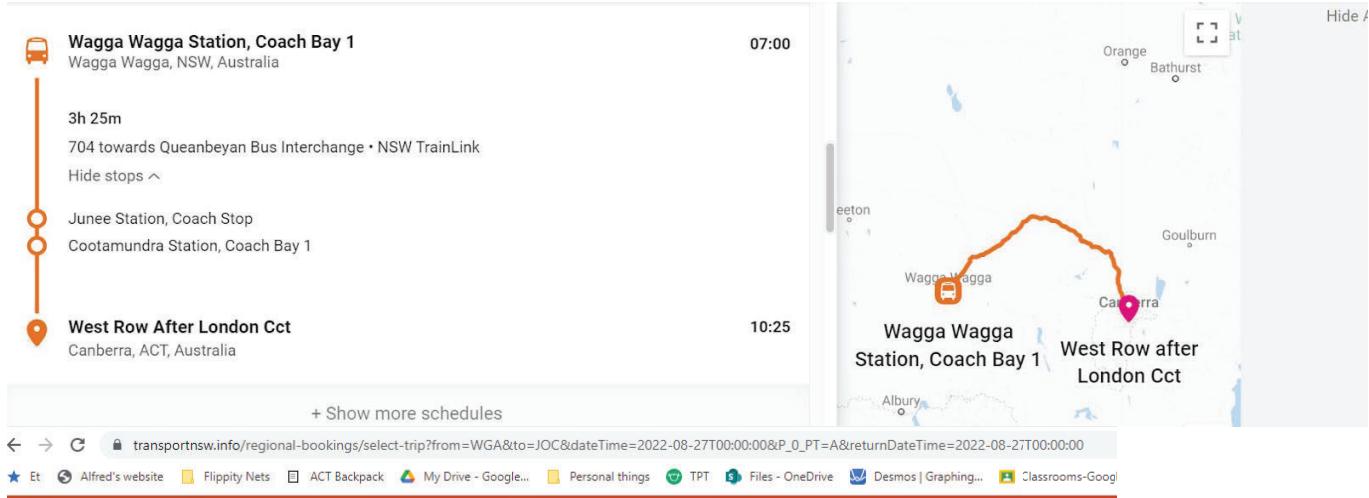
Depart Canberra for Wagga Wagga via bus	Arrive Wagga Wagga 8:50pm	
	<p>Total Time 13 hours 50 mins Total Distance Travelled 535.094km</p>	<b>Total Costs: \$232.41</b>

### Wagga Wagga to Canberra bus information

Depart Wagga Wagga 7:00am to Canberra Civic Coach Stop

3 hours 25 mins

Arrive Canberra 10:25am Cost \$25.73



Select forward trip Sat 27 Aug 2022

Wagga Wagga Station to Canberra Civic Coach Stop

3h 25min C → 10:25

07:00 ————— 3h 25min ————— 10:25

3h 25min C Canberra COACH SERVICE  
704  
07:00 Wagga Wagga Station  
10:25 Canberra Civic Coach Stop

[SHOW ADDRESSES](#)

Select fares  
Fares include the total price for all segments and passengers.

**Economy**

<input type="radio"/> Economy Saver	\$18.58
<input checked="" type="radio"/> Economy	<b>\$25.73</b>

[Luggage allowance](#) (includes 1 x 5kg hand luggage, 2 x 20kg checked/unchecked)  
[Onboard facilities](#)  
[Fare rules](#)

**SELECT THIS TRIP FOR \$25.73**

Neuron Scooter Costs:

\$1 to unlock and 38 cents per minute.

Beam Scooter Costs:

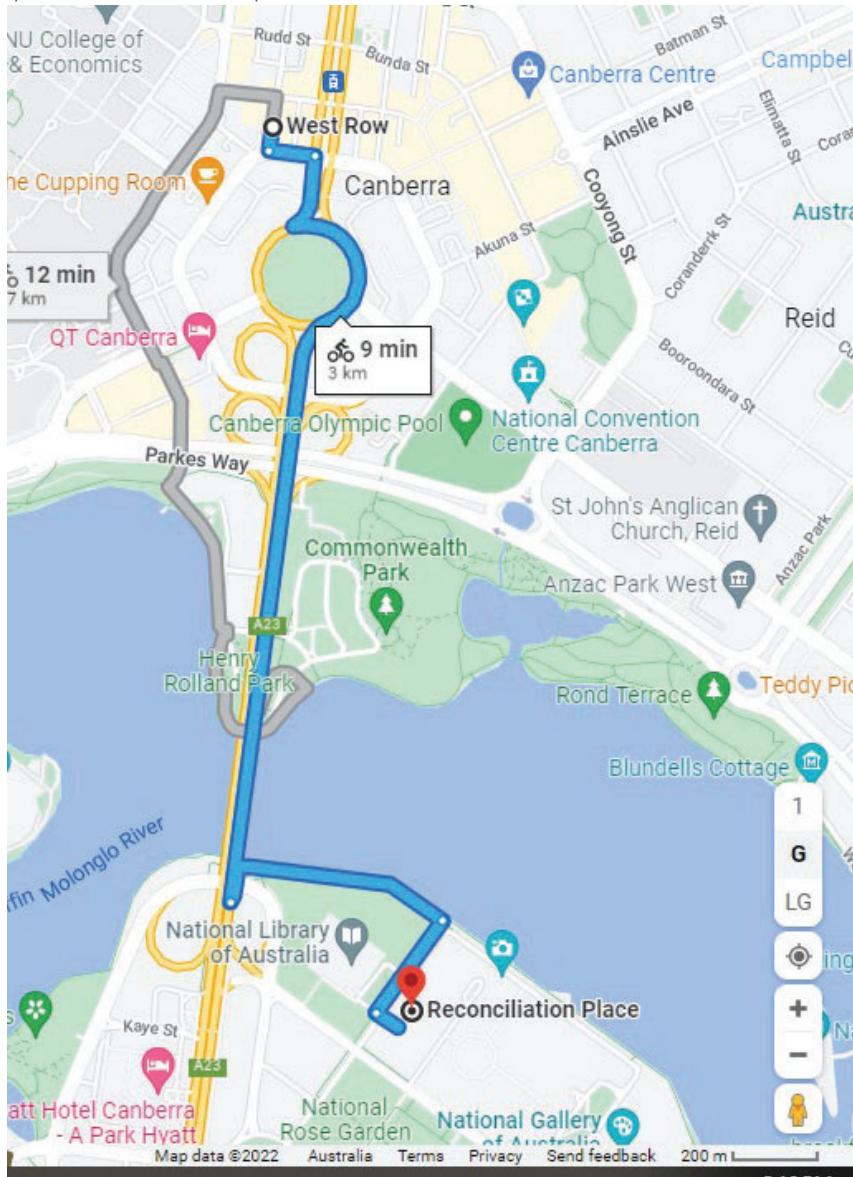
There is a \$1.00 unlock fee at the start of your ride, and then it costs \$0.45 for every minute that you ride. These are subject to change.

**\*\*I have used the Beam Scooter Costs in my calculations in case the cheaper option is not available at the time.**

**\*\* It is imperative to follow all safety requirements when riding the scooters, wearing a helmet, obeying speed limits, using common sense and safety when crossing roads or passing by pedestrians, bike riders and other riders of scooters.**

Canberra Bus Interchange to Reconciliation Park (about 15 minutes of travel on the scooter)

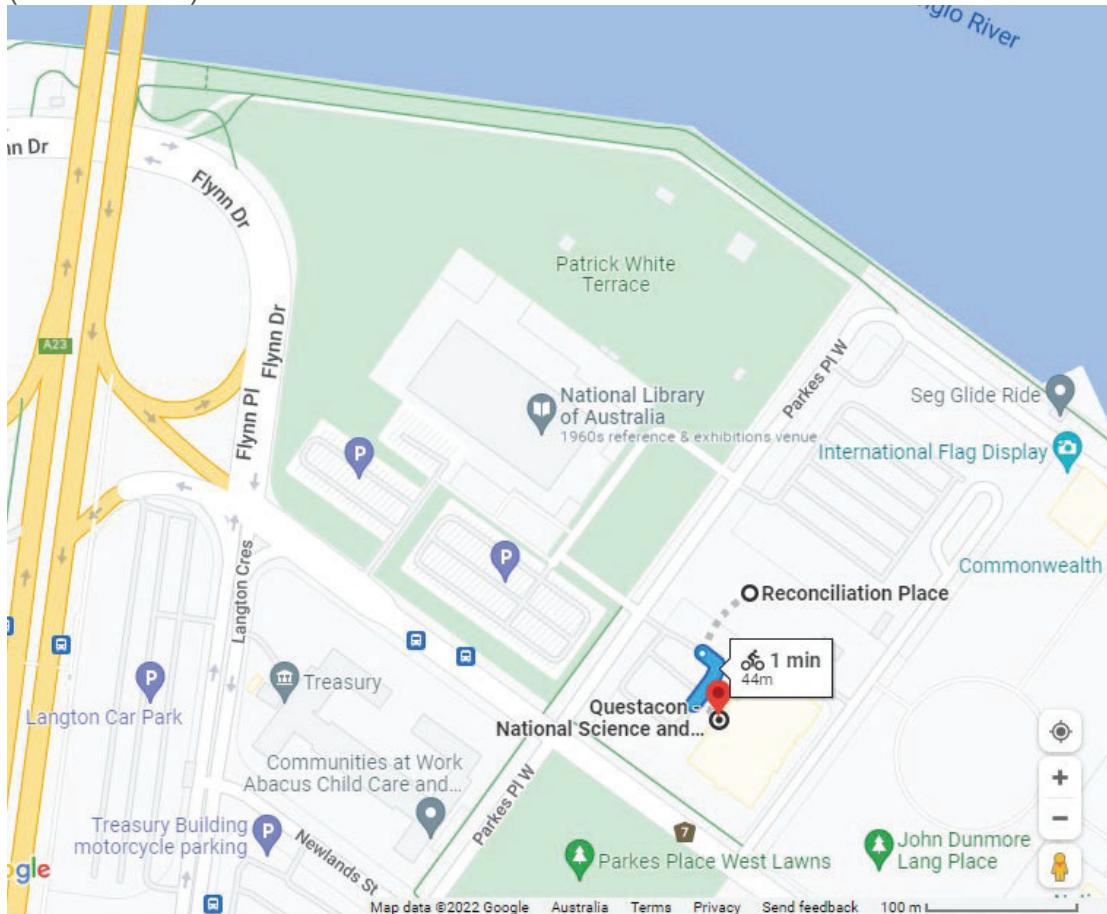
$$\$1 + 15 \times 0.45 = \$7.75$$



At Reconciliation Place stop to have a picnic and walk along Lake Burley Griffin to see the artworks used to represent the importance of understanding the shared history of Indigenous and non-Indigenous Australians. [Link](#) to Self -Guided Tour of Reconciliation Place.  
(Time 1 hour)

1 minute walk from Reconciliation Place to Questacon \$24.95 per person

(Time 1 hour)

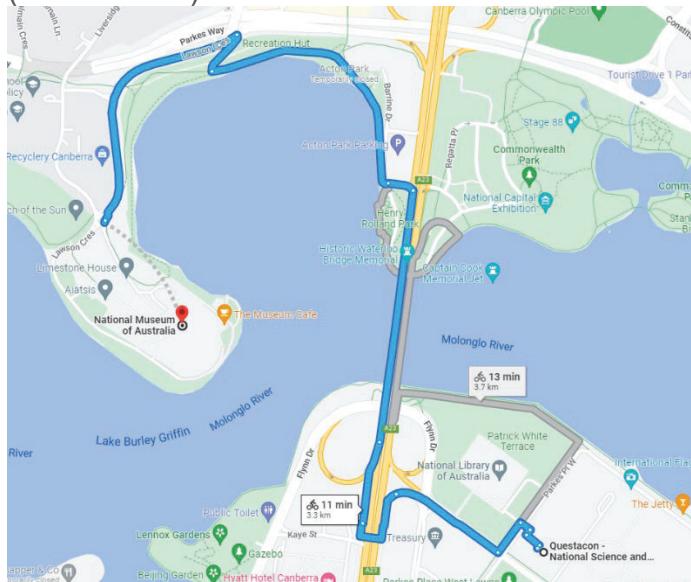


### Questacon to National Museum of Australia

Hire another Scooter to travel the 15-minute ride to National Museum of Australia  
\$1 + 15 x 0.45 = \$7.75

Admission to the Museum is free

(Time 1 hour)

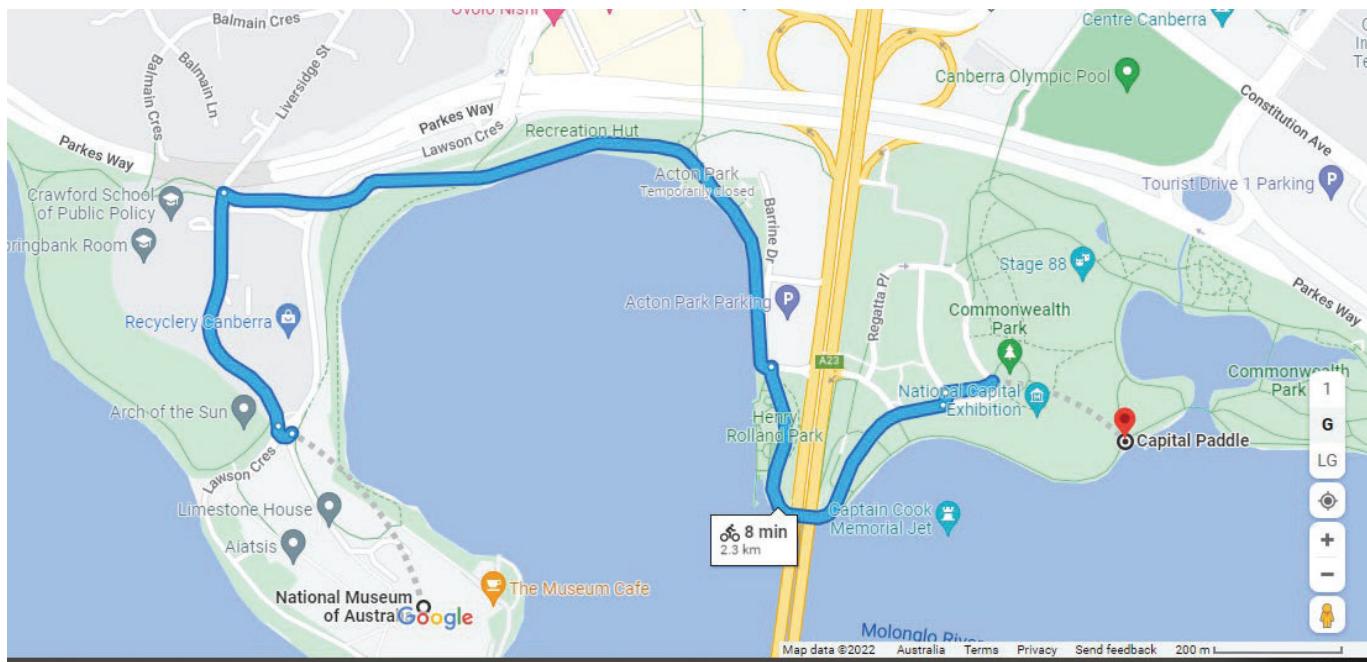


### National Museum of Australia to Capital Paddle

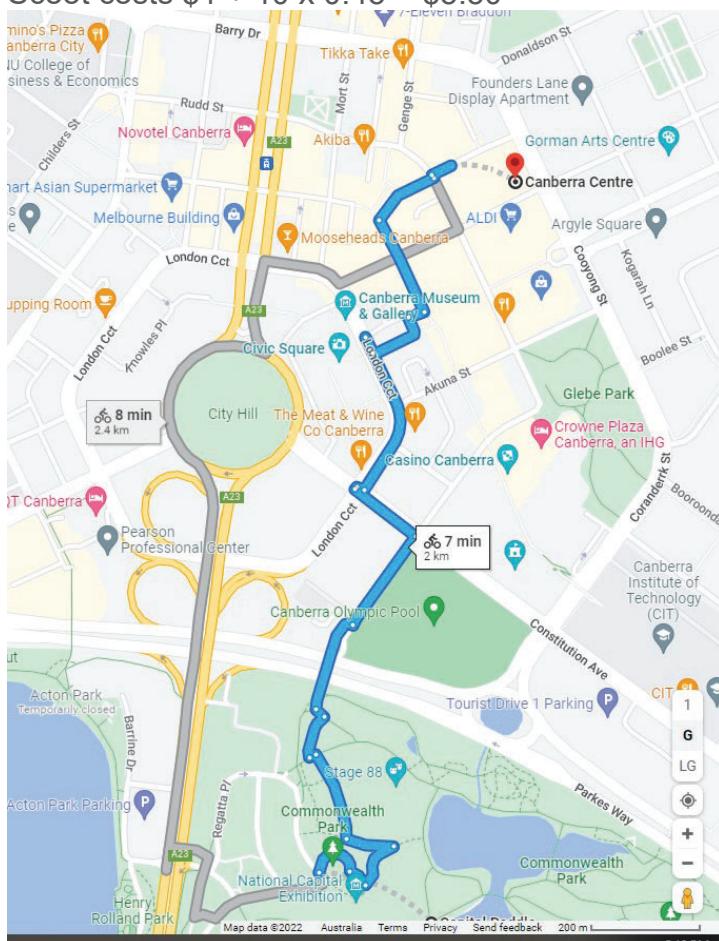
Walk or Scoot if scootering \$1 + 10 x 0.45 = \$5.50

Paddle Hire cost is \$25 for 30 minutes or \$35 for 60 minutes

(Time 1 hour)

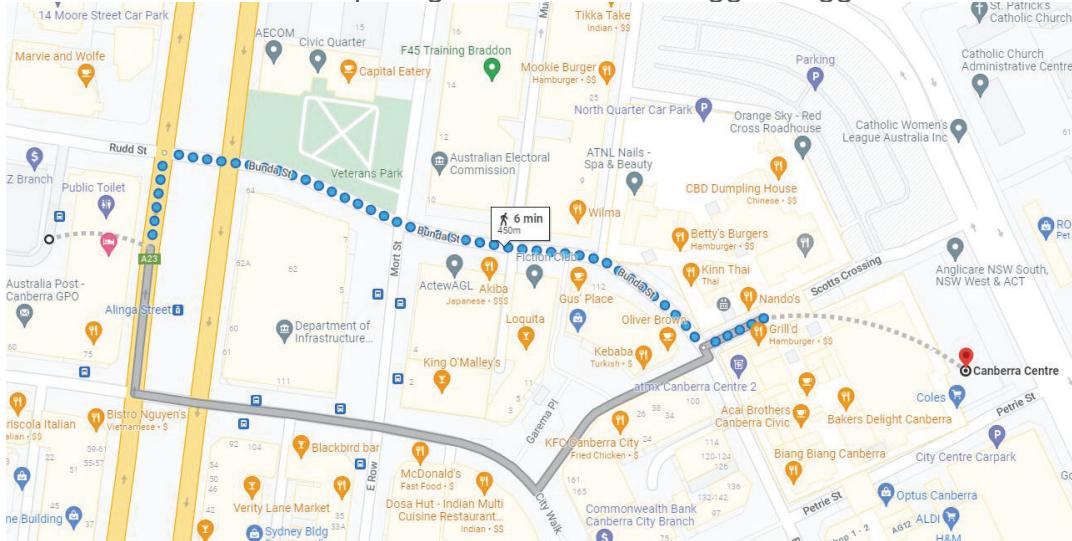


## Capital Paddle to Canberra Centre Scoot costs \$1 + 10 x 0.45 = \$5.50



Once at Canberra Centre, have some afternoon tea, relax, maybe do some shopping.  
Depart Canberra Centre at 5:00

## 6 minute walk to Bus stop for get Bus Back to Wagga Wagga



5:25 Depart Canberra on Bus to Wagga Wagga, arrive back to Wagga cost \$25.73.  
Arrive back in Wagga Wagga 8:50pm.

[transportnsw.info/regional-bookings/select-trip?from=JOC&to=WGA&dateTime=2022-08-27T00:00:00&p\\_0\\_PT=A&returnDateTime=2022-08-27T00:00:00](https://transportnsw.info/regional-bookings/select-trip?from=JOC&to=WGA&dateTime=2022-08-27T00:00:00&p_0_PT=A&returnDateTime=2022-08-27T00:00:00)

From **\$23.66**

09:37 → 13:53

4h 16min

From **\$43.02**

16:20 → 02:52 +1 day

10h 32min

From **\$25.73**

17:25 → 20:50

3h 25min

Wagga Wagga COACH SERVICE 703

17:25 Canberra Civic Coach Stop

20:50 Wagga Wagga Station

**SHOW ADDRESSES**

Select fares  
Fares include the total price for all segments and passengers.

**Economy**

Economy Saver **\$18.58**

Economy **\$25.73**

Luggage allowance (includes 1 x 5kg hand luggage, 2 x 20kg checked/unchecked)

Onboard facilities

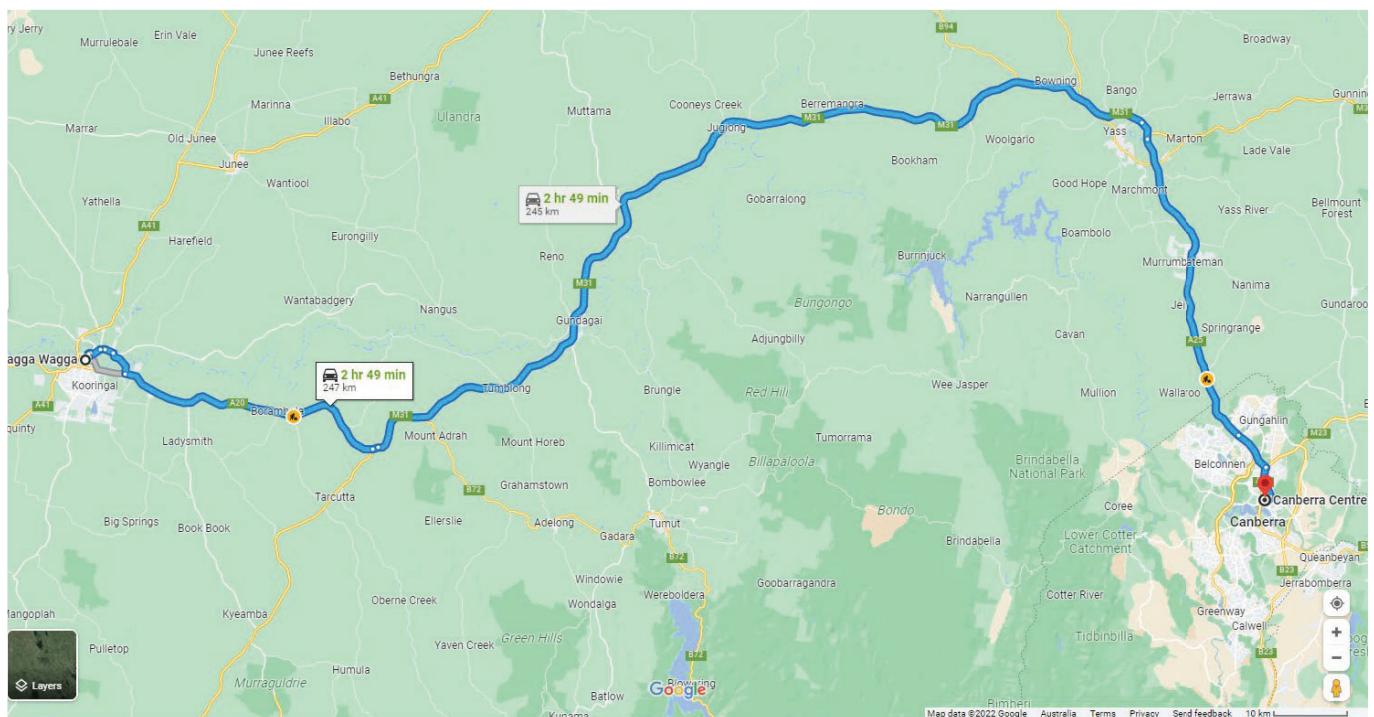
Fare rules

Private Vehicle Option Itinerary		
Depart Wagga Wagga Arrive Canberra West Row St	7:45am -10:50am  2 hours 50 minutes driving time **15 minutes break time for driver safety at Coolac Rest Area which has toilet facilities as a bonus. Average Speed (not including rest stop) 87.18 km/hr  $247 \div 2 \frac{50}{60} = 87.18 \text{ km/h}$	247 km travelled  All Day parking at Wilson Carpark at Canberra Centre \$3.00
From Canberra Centre find Beam Scooter to travel to Reconciliation Place ** Be sure to use Helmet with Scooter	10:50am - 15 mins = 11:05am  3.4 km	\$7.75
Spend 1 hour in Reconciliation Place having a packed picnic and enjoy artworks	11:05am - 12:05am	
Travel to Questacon Spend 1 hour investigating Questacon	1 minute travel 44 metres 1 hour Depart 1:06pm	\$24.95 per person
Travel from Questacon to National Museum of Australia Spend 1 hour investigating National Museum of Australia ** Be sure to use Helmet with Scooter	15 minutes (3.3 km) 1 hour Depart 2:22pm	Scooter fee \$7.75
Travel from National Museum of Australia to Capital Paddle ** Be sure to use Helmet with Scooter ** Be sure to wear a life jacket while on water.	10 minutes travel (2.3km) 1 hour on the lake Depart 3:32pm	\$35
Travel from Capital Paddle to Canberra Centre ** Be sure to use Helmet with Scooter Have afternoon tea in or around Canberra Centre and do some shopping	10 minutes (2 km) Arrive 3:42pm  1 hour  Depart Canberra Centre 4:42pm	Scooter Fee \$5.50  Budget \$100 for Lunch and some shopping
Depart Canberra Centre Car Park for Wagga Wagga	2 hours 50 minutes driving time **15 minutes break time for driver safety at Coolac Rest Area which has toilet facilities as a bonus. Arrive Wagga Wagga 7:47pm	247 km travelled
	Total Time	Total Mileage Driving:

12 hours 2 minutes

Total Distance Travelled 505.044 km

247 km x 2 = 494km  
Mini Cooper S: 16.3 kmpl  
 $494/16.3 = 30.3$  Litres  
 $30.3 \times 2.05/\text{litre} = \$62.12$   
Other costs: \$183.95  
**Total Costs: \$246.07**



← from Wagga Wagga, New South Wales 2650  
to Canberra Centre, 61 Cooyong St, Braddon ACT ...

**2 hr 49 min (247 km)**



via Hume Hwy/M31

Fastest route now due to traffic conditions

#### Wagga Wagga

New South Wales 2650

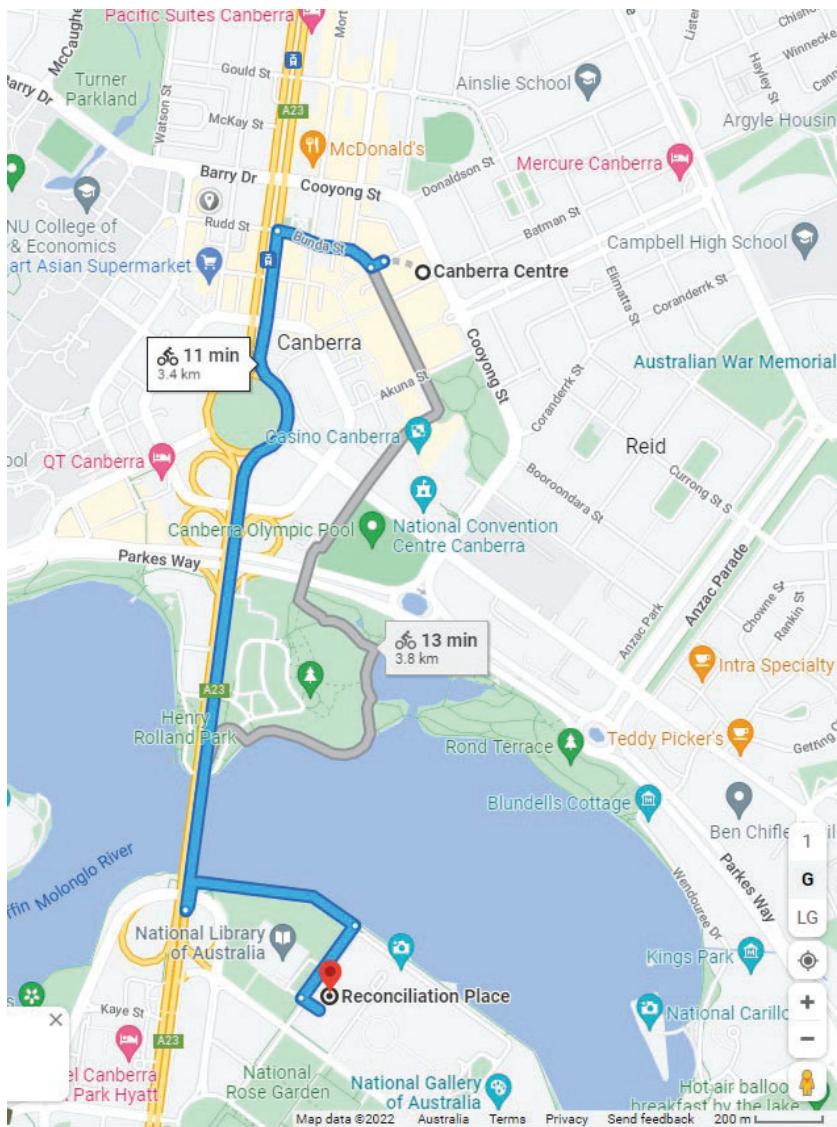
- Get on Hume Hwy/M31 in Tarcutta from Sturt Hwy/A20  
37 min (49.1 km)
- Follow Hume Hwy/M31 to Barton Hwy/A25 in Yass. Take the exit from Hume Hwy/M31  
1 hr 23 min (141 km)
- Continue on Barton Hwy/A25. Drive to Cooyong St in Canberra  
48 min (57.0 km)

#### Canberra Centre

61 Cooyong St, Braddon ACT 2612

These directions are for planning purposes only. You may find that construction projects, traffic, weather or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

I have chosen to park for the day at Canberra Centre as the cost is quite reasonable at \$3.00/day on Saturday and it allows the people travelling to Canberra see more of our beautiful Lake Burley Griffin region and stretch their legs using the scooters to get around to the sites.



#### Beam Scooter Costs:

There is a \$1.00 unlock fee at the start of your ride, and then it costs \$0.45 for every minute that you ride.

**\*\*I have used the Beam Scooter Costs in my calculations in case the cheaper option is not available at the time.**

**\*\* It is imperative to follow all safety requirements when riding the scooters, wearing a helmet, obeying speed limits, using common sense and safety when crossing roads or passing by pedestrians, bike riders and other riders of scooters.**

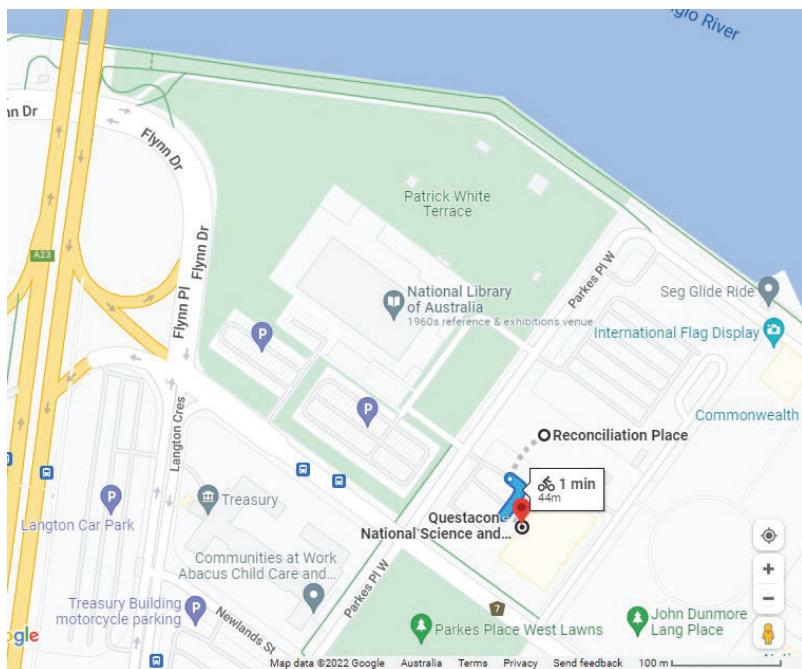
Canberra Bus Interchange to Reconciliation Park (about 15 minutes of travel on the scooter)  
 $\$1 + 15 \times 0.45 = \$7.75$

At Reconciliation Place stop to have a picnic and walk along Lake Burley Griffin to see the artworks used to represent the importance of understanding the shared history of Indigenous and non-Indigenous Australians. [Link](#) to Self -Guided Tour of Reconciliation Place.

(Time 1 hour)

1 minute walk from Reconciliation Place to Questacon \$24.95 per person

(Time 1 hour)



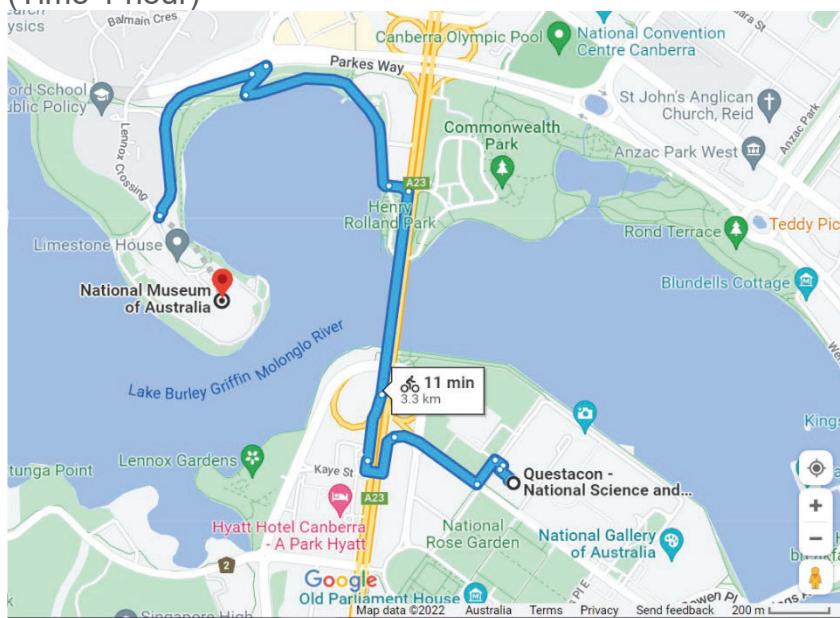
### Questacon to National Museum of Australia

Hire another Scooter to travel the 15-minute ride to National Museum of Australia

$$\$1 + 15 \times 0.45 = \$7.75$$

Admission to the Museum is free

(Time 1 hour)

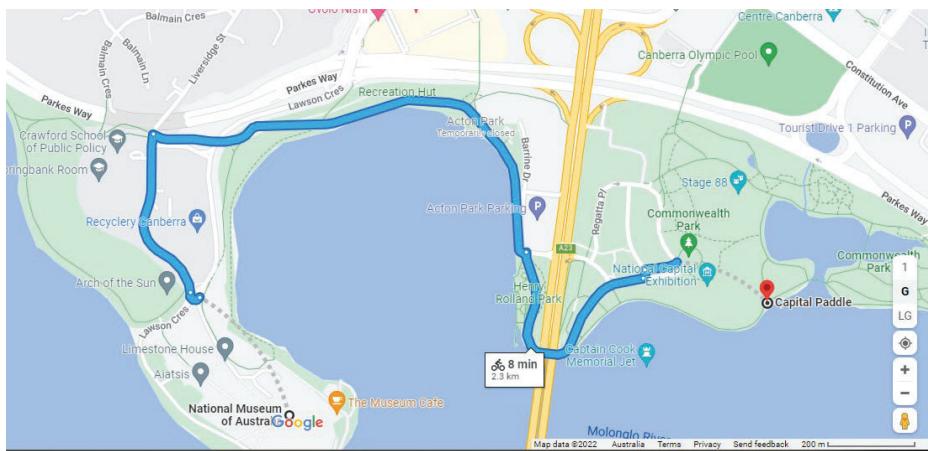


### National Museum of Australia to Capital Paddle

Walk or Scoot if scootering  $\$1 + 10 \times 0.45 = \$5.50$

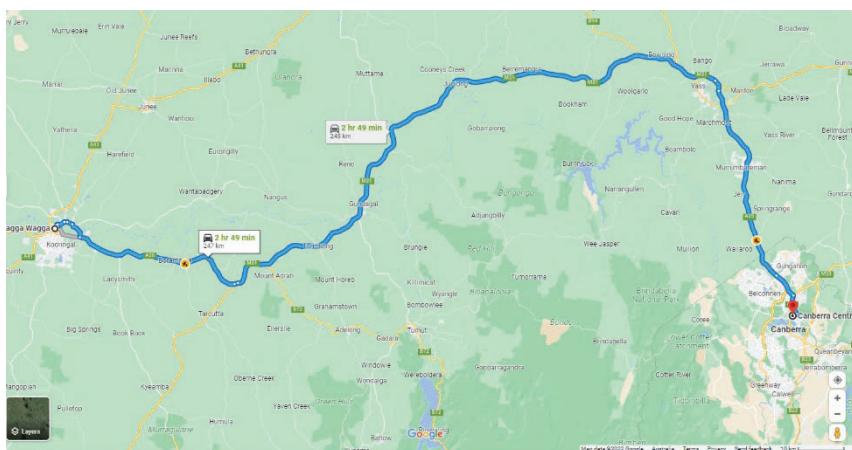
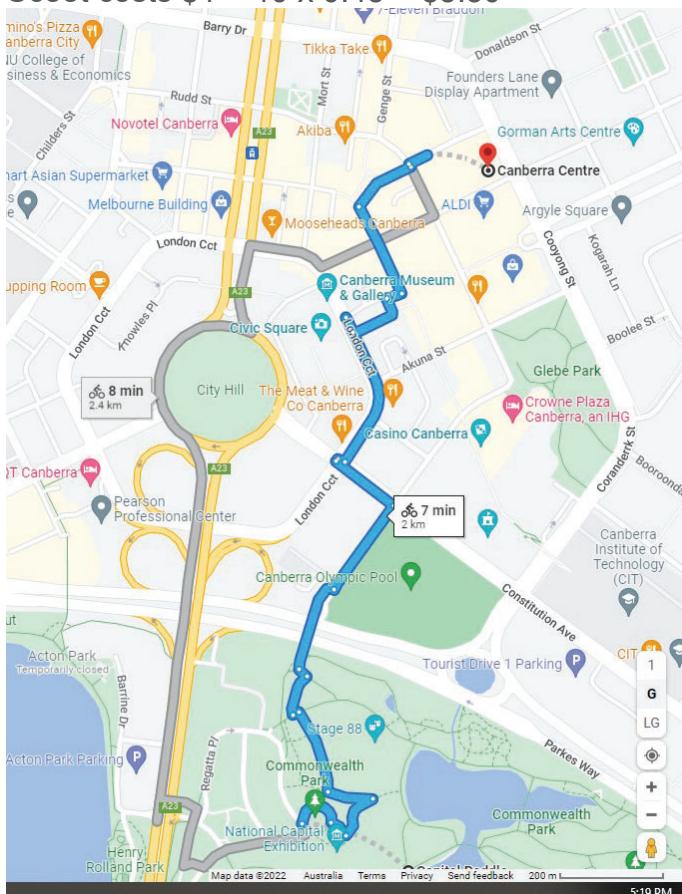
Paddle Hire cost is \$25 for 30 minutes or \$35 for 60 minutes

(Time 1 hour)



## Capital Paddle to Canberra Centre

Scoot costs \$1 + 10 x 0.45 = \$5.50



## References:

- [https://transportnsw.info/regional-bookings/select-trip?from=JOC&to=WGA&dateTime=2022-08-27T00:00:00&P\\_0\\_PT=A&returnDateTime=2022-08-27T00:00:00](https://transportnsw.info/regional-bookings/select-trip?from=JOC&to=WGA&dateTime=2022-08-27T00:00:00&P_0_PT=A&returnDateTime=2022-08-27T00:00:00)  
Bus timetable from Wagga Wagga to Canberra
- <https://www.ridebeam.com/faq/au-faq-escooter-groupride-universal>  
Scooter hire information
- <https://www.rideneuron.com/>  
Scooter hire information
- <https://www.nca.gov.au/attractions/reconciliation-place>  
Reconciliation Place information
- <https://www.nma.gov.au/>  
National Museum of Australia information
- <https://www.questacon.edu.au/>  
Questacon Science Museum information
- <https://www.capitalpaddle.com.au/>  
Paddle Boat Hire for Lake Burley Griffin
- <https://canberracentre.qicre.com/>  
Canberra Centre parking information

## Reflection:

I can reflect on my learning particularly with regard to the public transport option of travelling from Wagga Wagga to Canberra. I needed to learn a lot about the places the public transport options stopped and the most efficient way of travelling –busses, trains, etc. I did not know a lot about this and needed to upskill. The other area I needed to reflect upon was when using private transport if I wanted to drive from Reconciliation Place to the National Museum, etc. In the end I decided it would be best to use the scooters as you can get a nice view of the city that way. Lastly, I decided to park at Canberra Centre for my private transport option as this was cheap and central parking on a Saturday.

To manage my time, I started by working on the public transport option as I thought this would be the option requiring the most time-consuming research before, I settled on a bus. I made a schedule for myself that I would give myself 7 days to work out the public transport option, 3 days to work out the private transport option and then the final 2 days doing a comparison. A lot of the information I found for the public transport options, like costs of museum, paddle boat hire, etc were the same for both options and this meant I could get through the second set of calculations more quickly. I then gave myself a day off from thinking about the assignment and came back to it to do my final editing and checking of the rubric to ensure I had addressed all criteria (that was when I realised, I had forgotten about this reflection).

I used the speed = distance/time formula to determine average speeds for the journeys. When calculating the times of the itinerary I usually worked out how many minutes were required to the next hour and then how many minutes were left over. I used the suggested time for travel that Google Maps provided and then usually added an additional couple of minutes just in case.

## **Comparison Private Vehicle or Public Transportation**

### **Public Transport Summary**

- Cost \$232.41 per person
- Total time taken: 13 hours 50 mins
- Distance Travelled 535.094km
- Average Speed from Wagga Wagga to Canberra 76.68 km/h
- Convenience: Toilet on the Bus, no need to drive, passengers can sleep, read, watch a video, etc

### **Private Vehicle Summary**

- Cost \$246.07 for one person but each additional person will cost \$183.95 each (more cost effective is 2 or more people travelling)
- Total time taken: 12 hours 2 minutes
- Distance Travelled 505.044km
- Average Speed from Wagga Wagga to Canberra 87.18 km/h
- Convenience: Can stop whenever needed for a break, however someone needs to be concentrating on driving for the whole time

### **Comparison:**

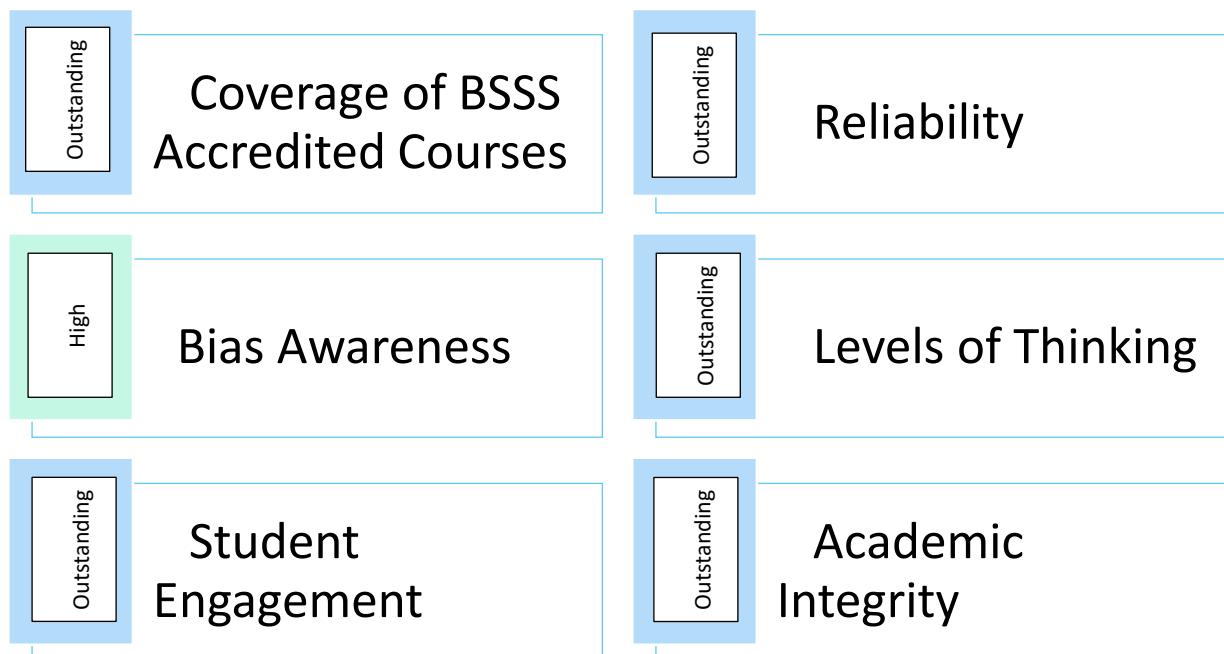
- Cost for 1 person is more effective if using public transport, the cost for 2 or more people if using private transport is more cost effective.
- Total time taken using private transportation is shorter by 1 hour 48 minutes
- Total distance travelled for public transport is 30.05km this is not a huge difference and probably would not be a significant factor in my decision making.
- Average speed per hour on public transport is 10.5 km/h slower than private transport, coupled with the slightly longer distance travelled with public transport this adds more time to the trip. The public transport would likely be slower as the bus needs to stop along the way to allow people on and off the bus and as a heavier vehicle, the bus would probably struggle to maintain speeds near the maximum speed limit allowed.
- Convenience for 1 person travelling would more likely be public transport whereas the convenience factor for private transport would probably be preferable due to the ability to stop if needed.

To choose a mode of transport I would need to assess how many people were going on the trip.

If I were going on my own, I would take public transport so that I would not need to worry about getting tired driving, especially on the way home.

If I were going with a couple of friends (or even 1 friend) I would probably choose to drive so that we could share the driving and the cost with 3 people for private transport would be \$613.97 as opposed to the cost for 3 people to take public transport would be \$697.23. With 3 people, private transport is more cost effective and safe to share the driving as well as saving us 1 hour and 48 minutes which is significant for such a long day.

## 11 ESSENTIAL MATHS INVESTIGATION TASK: ANALYSIS OF THE TASK USING THE BSSS QUALITY ASSESSMENT GUIDELINE



### 1. COVERAGE OF BSSS ACCREDITED COURSES

Outstanding Coverage of BSSS Accredited Courses – Assessment tasks are strategically planned for alignment with Achievement Standards, unit goals and content descriptors. Assessments are not too big: assessing irrelevant content or criteria; nor too small: missing important content or criteria

### COMMENTS

The assessment addresses Unit 2 Essential Mathematics content descriptions from the following topics:

- Representing and Interpreting Data unit (tables, etc for transportation options);
- Rates and Ratios unit (average speed calculations);
- Time and Motion unit (time, distance and speed calculations)

The assessment task also addressed cross curricular priorities of:

- Aboriginal and Torres Strait Islander Histories and Cultures

The assessment task addressed general capabilities of

- Literacy (reading websites to decipher relevant information for the trip)
- Numeracy
- ICT (Google Maps)
- Personal and Social Capabilities (time management)
- Ethical Understanding (safety concerns)

The assessment addresses Achievement Standards as indicated in the annotated document.

## 2. RELIABILITY

**Outstanding Reliability** - Assessment tasks and marking are strategically designed to remove all sources of non-relevant variation in measurements.

### COMMENTS

Rubric is very detailed and clear as to student expectations. Students have different starting and ending points that have been randomly allocated by their teacher and students can choose from one of many places of Indigenous significance and their own “other places” to visit in Sydney. Students were provided an example of a B grade assessment task to aid in their understanding of what is required for completion of this task.

## 3. BIAS AWARENESS

**High Bias Awareness** - The suite of assessment tasks is designed that promote the diverse needs of gender, socio-economic status, disabilities and/or cultures, and that do not marginalise or favour a student or group of students, or advantage or disadvantage certain background knowledge or ways of thinking.

### COMMENTS

This assessment is designed for students to choose their own locations to visit which can address their identity concerns and celebrate these.

## 4. LEVELS OF THINKING

**High Levels of Thinking** – Clear assessment tasks are designed that allow students to engage at progressively higher cognitive demands. The suite of assessments demonstrates that there are expectations for all learners at all levels of learning and opportunities for extending all learners are strategically planned for. Assessment tasks are flexible and varied, covering a range of assessment modes.

### COMMENTS

Most portions of this assessment task allow for students to achieve at an A level which requires them to explain and justify their mathematical thinking and decision making for the choices they make in their assessment.

## 5. STUDENT ENGAGEMENT

**Outstanding Student Engagement** – Assessment tasks are strategically planned to engage students. Assessment tasks are explicitly and purposefully connected to contemporary issues or student lived experiences, interests, or prior knowledge. The suite of assessment tasks clearly supports student ownership.

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#### COMMENTS

Students are allowed a significant amount of choice in this task to decide how they will travel and where they will visit. These students are not far off the age where an independent trip to Sydney with friends might be a part of their lived experience and also the information, they need to obtain with relation to the driving aspects is quite timely for a number of them who are moving to their Provisional Licences.

#### 6. ACADEMIC INTEGRITY

**High Academic Integrity** – Academic Integrity is discussed with students with expectations with respect to academic integrity and the consequences of cheating or plagiarising is made clear. Assessment is designed to encourage original thinking from students and requires individualised responses that will be different.

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#### COMMENTS

It is expected that the teacher in class has discussed with students the requirements around academic integrity and ensuring that work submitted represents their own learning efforts. Assessment task has been designed to allow original thinking where students have different starting and finishing places and individualised responses that will be different from other student submissions.

