Mathematics Foundation
Practical Application
Which route?
Year 11 Unit 1

Brief Description:

This practical application allows students to demonstrate their understanding, problem solving and reasoning in the context of selecting the most appropriate route to reach a destination by a given time. Students will need to use the mathematical thinking process throughout this assessment.*

Syllabus Dot Points:

1.4.7   compare units of time to say how long events take, or to order events in time

1.4.10 use addition and subtraction to solve simple problems involving calendars and timetables with one type of time unit

1.4.11 determine whether an answer is reasonable, given the context of the problem

1.4.12 communicate information (oral and written) about time using language and symbols consistent with the context.

Recommended Time:

1 lesson

Acknowledgements:

Google Maps https://www.google.com/maps

*Students should be explicitly taught the Mathematical Thinking Process in conjunction with learning of course content, not just in assessment form. Copies of MAWA classroom posters are available at https://drive.google.com/file/d/1c3GfM1o4cSBrzyWaFFIYlAmPU3-KS-rx/view

Which route?

You have decided to take a mid-week break to Walpole. You have checked out three possible routes on Google Maps and would like to arrive no later than 1pm. However, you know that if you leave Perth between 8:00am and 9:30am, then both routes using the freeway (in grey) will take an extra 48 minutes due to peak hour traffic.
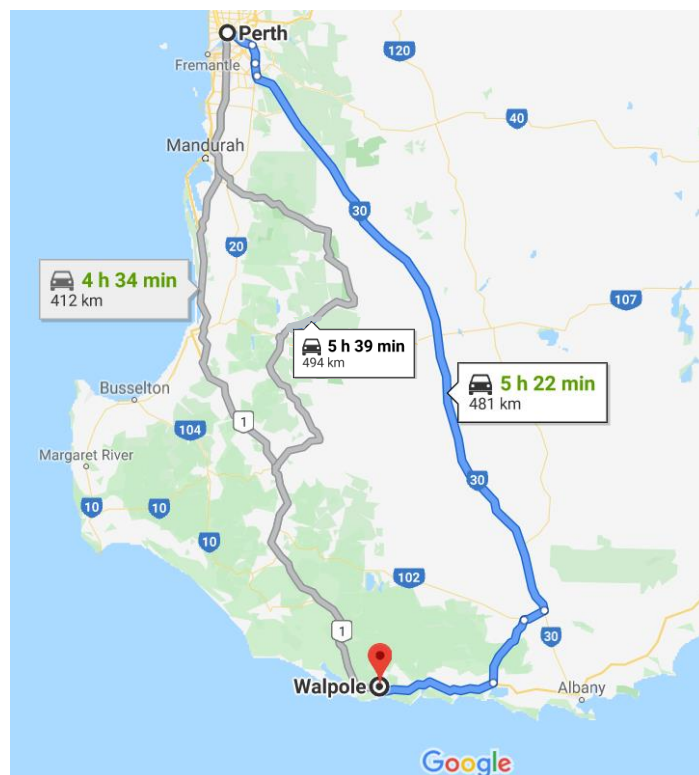
Which route should you take and what time do you need to leave home to make sure you arrive by 1pm?

**You must support your answers with mathematical reasoning and evidence.**

Your practical application should include the following:
- ☐ Key words/information highlighted
- ☐ A brief description of what the task is asking you to do
- ☐ Clear working out for any calculations made (including correct units)
- ☐ A concluding summary of your findings linking back to the original question (2-3 sentences).

Suggested Marking Key

Introduction		
I have to take to Walpole. I to choose from and have to arrive before .		
Specific behaviours		**Marks**
Provides a simple introduction of task		1
Restates in their own words		1
Identifies arrival time		1
	Total	/3

Mathematical Modelling	
From the times given, Route is the quickest, followed by Route then Route . To arrive by (not including hour penalty) Must leave by: Route 1 – 8:26am Route 2 – Route 3 – Route time is within peak hour time, meaning I will actually arrive at . If I take mins off, then I should leave at am, the same as Route .	
Specific behaviours	**Marks**
States Route 1 as quickest route (without peak hour penalty)	1
Calculates leaving times for Route 1 (without peak hour penalty)	1
Calculates leaving times for Route 2 (without peak hour penalty)	1
Calculates leaving times for Route 3	1
Identifies Route 1 as leaving in peak hour	1
Adjusts Route 1 leave-time due to peak hour penalty	1
Total	/6

Interpretation & Conclusion	
If I take mins off, it is the same as Route ( ), but I could just leave at , and beat peak hour and arrive at . I would definitely choose Route . If I just leave a few minutes before , I only have to drive for instead of and still get there before .	
Specific behaviours	**Marks**
Clearly states chosen route	1
Supports choice with mathematical reasoning	1
Brief conclusion linking to original problem	1
Total	/3

Sample Marking Checklist

MTP Checklist

Student Name:

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Interpret the task and key information
- € has identified key information
- € can rewrite problem in their own words
- € has identified any information that is not needed, or is missing
- € asked for clarification

Choose the mathematics
- € identified all the mathematics required
- € chose an effective strategy:

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Apply existing mathematical knowledge
- € followed through with their plan
- € showed all working (even when a mistake was made/changed their mind)
- € appropriate use of units applied
- € worked independently

Interpret results
- € solutions answer the original problem
- € has identified what worked and what did not
- € has checked work by using a different method

Communicate
- € work is organised allowing for partner/teacher to understand
- € can explain their work when asked
- € has written a concluding statement linking back to the original problem

COMMENT: