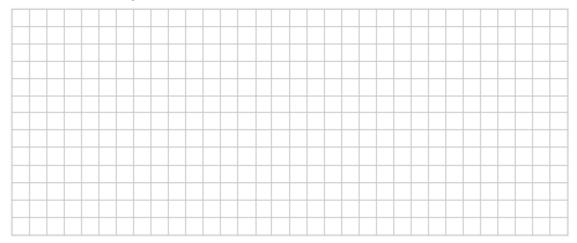
Speed challenging questions from HL maths

2019 HL P1 Q3c

(c) Lewis was driving at 90 km per hour when he sneezed. During the sneeze, his eyes were closed for half a second. Work out how many metres he travelled in this time.



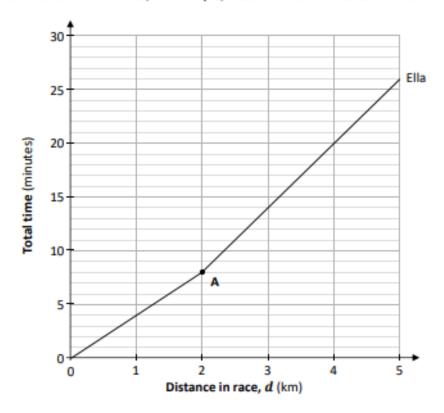
2019 HL PI Q6

Question 6

(Suggested maximum time: 20 minutes)

Poppy and Ella ran a 5 km race. The simplified graph below shows the time that it took Ella to run d km during the race. One of the points on the graph is marked \mathbf{A} .

Distance is on the horizontal axis so, for example, it took Ella 26 minutes to run the whole 5 km.



The table below shows the total time that it took Poppy and Ella to run each of the given distances in the race.

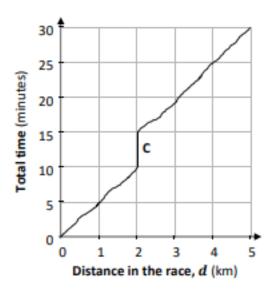
- (a) Using the figures in the table, draw a graph on the diagram above to show the time it took Poppy to run d km during the race, for 0 ≤ d ≤ 5 and d ∈ R.
- (b) Using Ella's graph, fill in the three missing values in the table below.

Distance in the race (km)	Total time taken for Poppy (minutes)	Total time taken for Ella (minutes)
1	5	4
2	10	
3	17	
4	24	
5	30	26

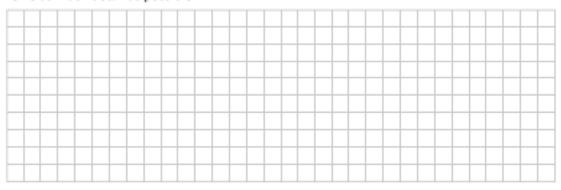
which is marked A on the graph. Tick one box only. Justify yo	km,
peed a	

This question continues on the next page.

Ciarán also ran the 5 km race. He drew the graph below to show the time that it took him to run d km during the race. The part of Ciarán's graph marked \mathbf{C} is a vertical line.



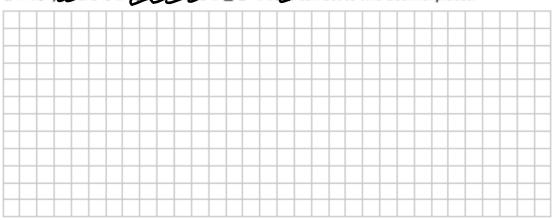
(f) What does the part C tell us about Ciarán's running at this stage of the race? Give as much detail as possible.



2017 HL PIQ36& 3c

(b) During the Apollo-11 mission, it took approximately 1·3 seconds for a radio signal to travel 380 000 km.

Find the average speed of the radio signal, in km per minute. Give your answer transform



(c) In 2016, a spacecraft flew around Jupiter, 868 million km from earth.

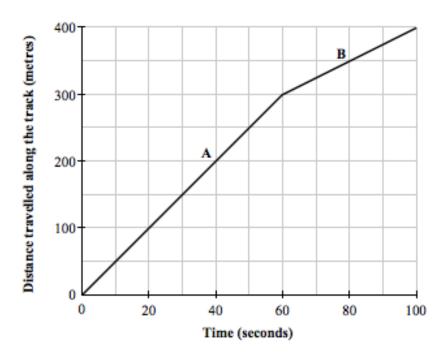
Find how many minutes it would take a radio signal to travel 868 million km. Assume that the radio signal would travel at the same speed as your answer to part (b).



Question 5

(Suggested maximum time: 10 minutes)

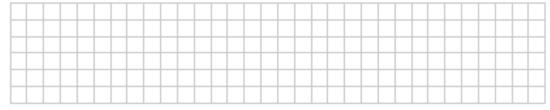
(a) The graph below shows the distance travelled along a track by Ann over the course of a race. The graph is in two sections, labelled A and B.



Show that Ann's speed in section A is 5 metres per second.



(ii) Find Ann's speed in section B, in metres per second.



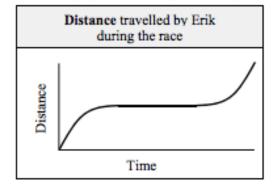
(b) Table 1 shows graphs of the distance travelled along the track by Bill, Claire, and Dee during the same race. Each person's name is written next to their graph.

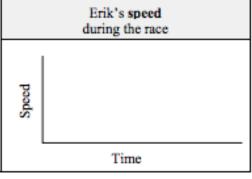
Table 2 shows graphs of the speed of Bill, Claire, and Dee during the race.

Complete Table 2, by writing the correct name next to each graph.

Table 1		Table 2	
Distance travelled during the race	Name	Speed during the race Name	
Distance	Bill	Time	
Distance	Claire	Time	
Distance	Dee	Peads	

(c) The graph below shows the distance Erik travelled along the track during the same race. Sketch the graph of Erik's speed during the race on the axes below.





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Mathematics Paper 1 – Higher Level