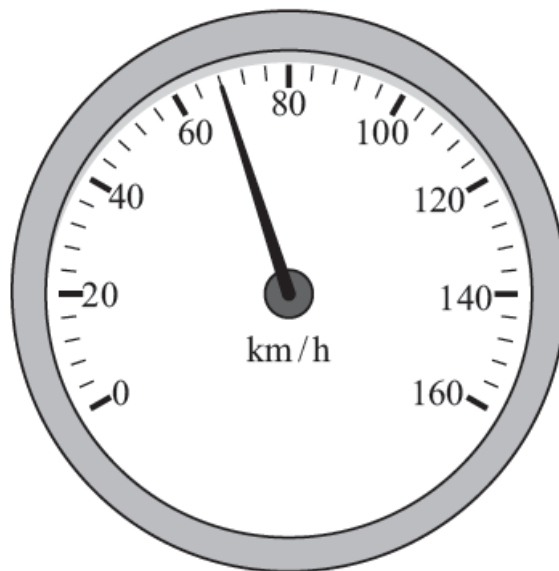


Time and rates of change – Checkpoint Sec 1 Math

1. No.5

Write down the speed shown on the diagram.



..... km/h [1]

2. No.6

A road is 450 metres long.

(a) It takes a woman 5 minutes to walk along the road.

Work out the average speed of the woman.

Give your answer in **metres per second**.

..... metres per second [2]

(b) A bicycle travels along the road at an average speed of 5 metres per second.

Work out the time it takes the bicycle to travel along the road.

Give your answer in seconds.

..... seconds [1]

3. No.9

Angelique goes on a train journey from Aba to Ditta.
Here is a section of the train timetable.

Aba	09:42	10:28	11:05	11:42
Burra	09:50	—	11:13	—
Cadez	10:16	—	11:39	—
Ditta	10:37	11:07	12:00	12:21

The afternoon journeys have the same duration as the morning journeys.

Angelique catches the 12:53 train from Aba.
The train does not stop at Burra or Cadez.

Work out the time Angelique arrives in Ditta.

..... [2]

4. No.26

Trains travel between two stations.

The distance between the two stations is 200 kilometres.

The average speed of two trains is shown in the table.

Train	Average speed
A	100 kilometres per hour
B	80 kilometres per hour

Calculate the difference between the journey times of the two trains.

Give your answer in **minutes**.

..... minutes [2]

5. No.6

Here is part of a bus timetable.

Southend	12:03	13:03	14:03	15:03	16:04
Rayleigh	12:35	13:35	14:35	15:37	16:41
Chelmsford	13:00	14:00	15:00	16:02	17:09
Stansted airport	13:39	14:39	15:41	16:44	17:52

(a) The 15:03 bus from Southend is 23 minutes late when it arrives at Stansted airport.

Work out the time the bus arrives.

..... [1]

- (b) Rajiv travels from Rayleigh to Stansted airport.
He arrives at Rayleigh at 14:45

Work out the number of minutes Rajiv waits for the next bus.

..... minutes [1]

- (c) Oliver travels by bus from Rayleigh to Stansted airport.
His flight leaves at 5:15 pm.
He needs to arrive at the airport more than 1 hour before the flight leaves.

Work out the latest time Oliver can leave Rayleigh.

..... [1]

6. No.8

Here are parts of two train timetables.

One shows journeys from Manchester to Leeds and the other shows journeys from Leeds to Manchester.

Manchester	07:40	08:11	08:41	09:11	09:41	10:10
Stalybridge	07:53	08:25	08:54	09:25	09:54	10:24
Huddersfield	08:12	08:46	09:13	09:46	10:13	10:45
Dewsbury	08:23	08:55	09:23	09:55	10:22	10:54
Leeds	08:36	09:09	09:36	10:08	10:35	11:07

Leeds	08:40	09:13	09:41	10:14	10:41	11:14
Dewsbury	08:51	09:24	09:52	10:25	10:52	11:25
Huddersfield	09:00	09:34	10:01	10:34	11:01	11:34
Stalybridge	09:19	09:54	10:19	10:54	11:19	11:54
Manchester	09:38	10:09	10:38	11:08	11:38	12:07

- (a) Carlos is travelling from Stalybridge to Leeds on the 08:54 train.

Find how long his journey takes.

..... minutes [1]

- (b) Jamila is travelling from Leeds to Dewsbury.
She arrives at the train station in Leeds at 8.50 am.

Find the time of the next train to Dewsbury.

..... [1]

- (c) Oliver travels from Huddersfield to Leeds on the 08:12 train.

He goes shopping in Leeds and returns to the station $1\frac{1}{2}$ hours after he arrived.

He then catches the next train back to Huddersfield.

Find the time he gets back to Huddersfield.

..... [1]

7. No.5

A plane flies between two cities 1836km apart.
It travels at an average speed of 850km/h.

Calculate how long the flight takes.
Give your answer in hours.

..... hours [2]

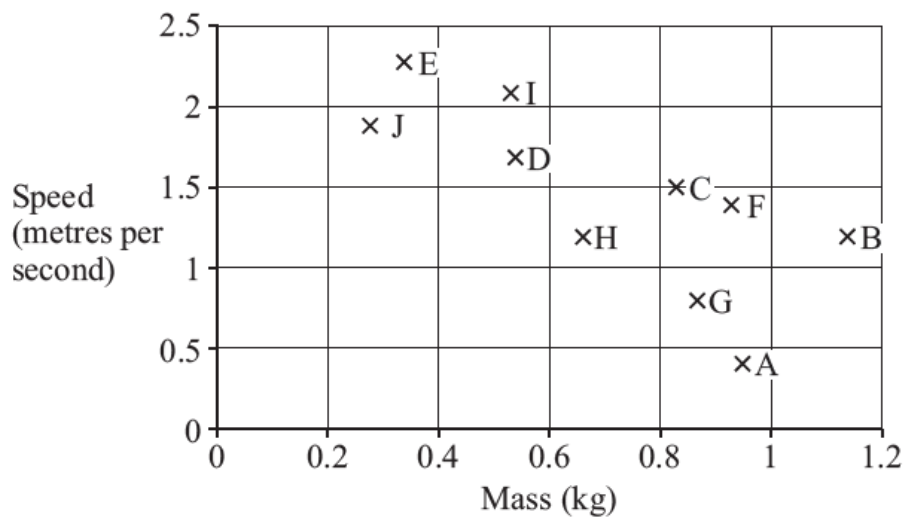
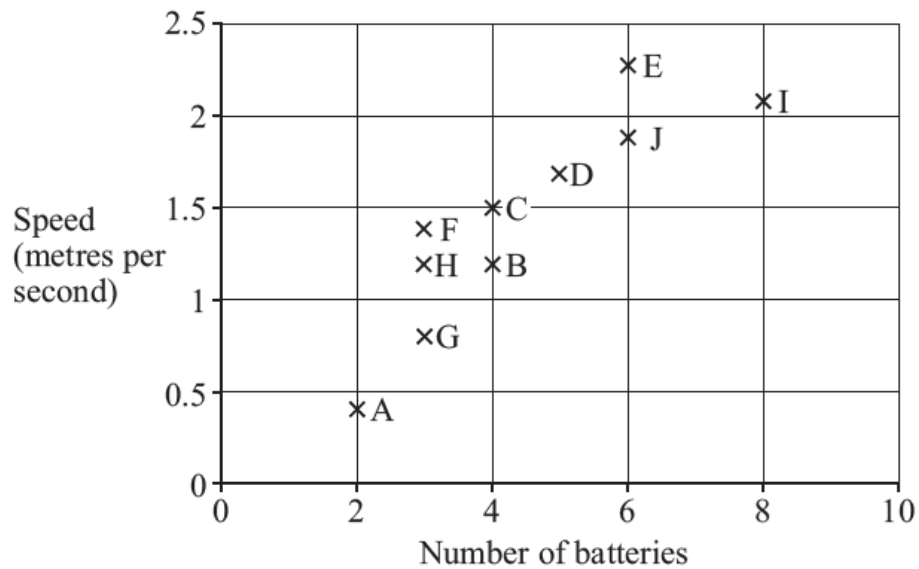
8. No.6

Ten teams (A to J) entered a competition to build a model car using plastic bricks.

Competition rules:

- (1) The maximum number of batteries to power the model car is 6
- (2) The maximum mass of the model car is 1 kg.
- (3) The winner is the model car with the greatest speed.

The scatter graphs show some information about the model cars built by the 10 teams.



9. No.23

Convert 15 miles into kilometres.

..... km [1]

10. No.24

A car travels at 72 km/h.

Work out the number of **metres** the car travels in one **second**.

..... m [2]

11. No.23

Change the 12-hour clock times into 24-hour clock times.

12-hour clock	24-hour clock
6.15 pm	
9.59 am	
12.01 am	

[2]

12. No.5

Pierre and Blessy are in a bike race.

(a) Blessy starts the race at 10.45 am and finishes at 2.10pm.

Work out how long Blessy takes.

Give your answer in hours and minutes.

..... hours minutes [1]

(b) Pierre cycles 18km in $\frac{1}{2}$ hour.

Work out his average speed.

..... km/h [1]

13. No.17

Here are the timetables for trains running from Dibside to Flaghaven and from Flaghaven to Hankberg.

	Monday to Friday						Saturdays only			
Dibside	09:06	11:06	13:06	15:06	17:06		10:06	12:36	15:06	17:36
Elmville	10:13	-	14:13	-	18:13		11:17	13:47	16:17	18:47
Flaghaven	11:32	13:24	15:32	17:24	19:32		12:40	15:10	17:40	20:10

	Monday to Friday						Saturdays only			
Flaghaven	09:40	11:40	13:40	15:40	17:40		09:30	12:30	15:30	18:30
Giyubi	09:55	-	13:55	15:55	17:55		09:45	12:45	15:45	18:45
Hankberg	10:08	12:05	14:08	16:08	18:08		09:58	12:58	15:58	18:58

(a) Oliver plans to take the 11:06 train from Dibside to Flaghaven next **Wednesday**.

Calculate how long his journey will take.

..... hours minutes [1]

(b) To travel from Dibside to Hankberg, passengers must change trains at Flaghaven.

Yuri needs to travel from Dibside to Hankberg next **Saturday**.

He must be at Hankberg before 18:15

Work out the time of the **latest** train he can take from Dibside.

..... [2]

14. No.17

Chen is a lorry driver.

He earns a bonus if he drives at least 2.8 kilometres per litre of fuel.

The figures show some information about Chen's last journey.

Journey time	=	4.5 hours
Average speed	=	61 km/h
Amount of fuel used	=	96 litres

Work out whether Chen earned a bonus for this journey.

Put a tick (✓) in the correct box.

Chen earned a bonus

☐

Chen did not earn a bonus

☐

Show how you worked out your answer.

[2]

15. No.24

Here are the details of a flight from London to Hong Kong.

Depart: London	20:20 local time
Arrive: Hong Kong	16:50 local time the next day
Flight time	12 hours 30 minutes

The time in Hong Kong is a number of hours ahead of the time in London.

Work out the number of hours ahead.

..... hours [1]

16. No.5

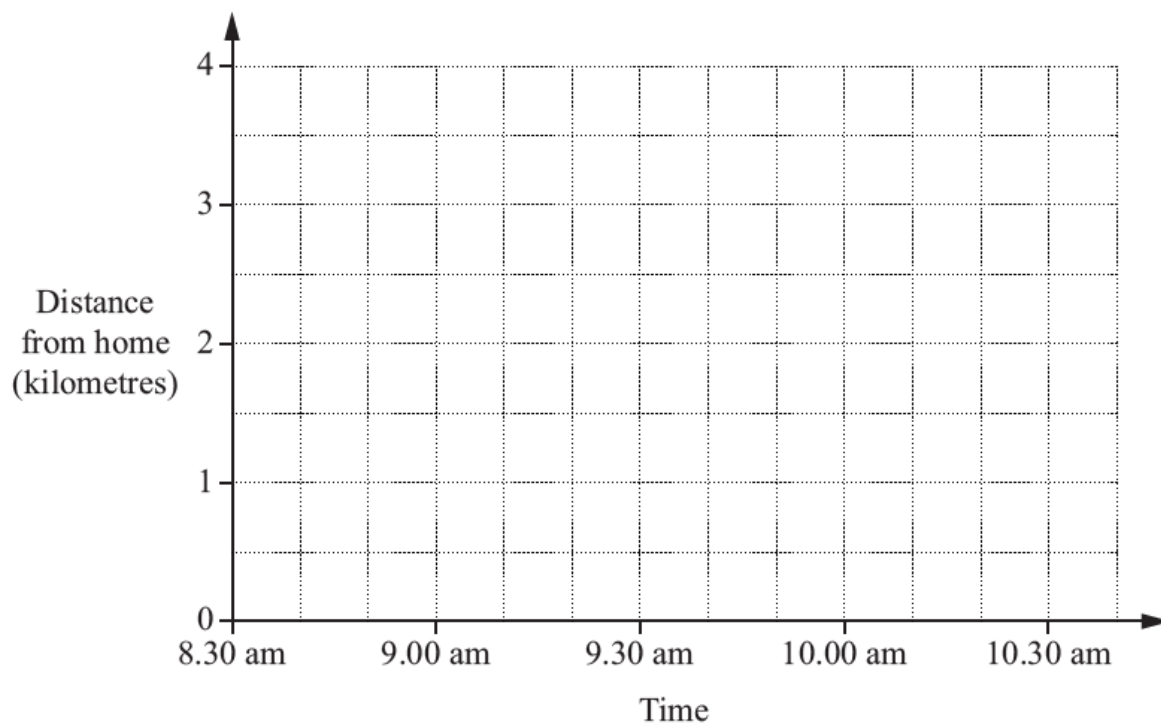
Angelique leaves home at 8.30 am.

She walks at a constant speed to a shop which is 3 kilometres from her home.

She arrives at the shop at 9.10 am and stays there for 15 minutes.

She then walks at a constant speed back home, arriving there at 10.10 am.

Draw a travel graph to show Angelique's journey.



[2]

17. No.17

(a) The table shows the times it takes Chen and Aiko to type some words.

	Number of words	Time taken	Typing speed (words per minute)
Chen	2020	40 minutes	
Aiko	7200	2 hours 30 minutes	

Complete the table.

[2]

(b) Mia can type 45 words per minute.

Work out how long it will take her to type 1300 words.
Give your answer to the nearest minute.

..... minutes [2]

18. No.14

A car travels 240 km in $3\frac{3}{4}$ hours.

Calculate the average speed of the car.

..... km/h [2]