

TARGET To calculate the mean of a set of data.

The mean or average of a set of data is the total divided by the number of items in the set.

Example

The number of hours worked by a plumber each day.

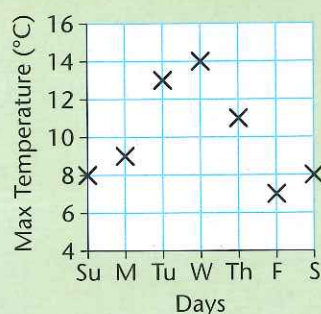
11 8 5 9 6 10 7 9 4 6

Total hours	75 hours
No. of days	10
Mean	7.5 hours ($75 \div 10$)

A

Find the mean of each set of data.

- The ages of the five children in a family.
5 5 8 12 15
- The shoe sizes worn by eight women.
3 5 3 4 6 3 5 3
- The marks out of 10 of nine children in a spelling test.
7 10 10 7 9
9 8 2 10
- The number of people entering a shop each minute.
8 4 2 7 8 3
6 3 8 4 5 2
- The daily maximum temperature in one week in November.



B

Find the mean of each set of data.

- The estimated heights in metres of a rock face made by the climbers.
90 80 100 150 70
100 110 90 80 100
- The ages of the eleven players in a football team.
26 24 17 20 26 28
19 30 25 17 21
- The number of buses stopping each hour at a bus stop.
1 3 5 5 4 2 3 4
5 4 2 3 2 1 1
- The number of people sitting at each table of a cafe.
4 1 0 2 1 4 1
1 4 3 4 1 0
- The daily maximum temperatures in °C for one week in May.

20	16	19	14
13	18	19	

C

Find the mean of each set of data.

- The heights in metres of the nine members of a family.
1.3 1.6 1.2 1.9
1.1 0.9 1.7 1.2 1.7
- The number of passengers getting off a bus at each of its first eight stops.
0 1 3 1 4 1 4 6
- The average daily maximum temperature in °C for each month of a year.
5 6 9 12 15 17
19 18 14 13 9 7
- The daily maximum temperatures in °C for one week in February.
4 5 1 -2 -1 4 3
- The number of people living in each of the 100 houses in a road.

People	3	4	5	6
Houses	20	35	30	15

TARGET To calculate and interpret the mean of a set of data.

The mean or average of a set of data is found by dividing the total of the values by the number of items in the set.

$$\text{MEAN} = \text{TOTAL} \div \text{ITEMS}$$

Examples

- 1 The number of letters delivered in the post each morning.

M	Tu	W	Th	F	Sat
4	7	6	3	8	2

Total of letters = 30.

Number of deliveries = 6.

Mean number of letters in each delivery
 $5 = (30 \div 6)$.

- 2 The ten anglers on a riverbank caught the following number of fish each.

8 11 5 9 6 10 7 9 4

The mean number of fish caught by each angler was 7.5. How many fish were caught by the tenth angler?

Total of fish caught by:

1st nine anglers = 69

All ten anglers = 75 (7.5×10)

10th angler = 6 ($75 - 69$)



A

For each set of data find:

- the total of the values
- the number of items in the set
- the mean.

- 1 The number of tries scored by a rugby team in each of their first nine games.

2 4 1 7 1 3 2 6 1

- 2 The weight of five packets of cheese.

220 g 260 g 210 g 220 g 240 g

- 3 The speed in miles per hour of seven cars.

65 55 40 50 55 75 45

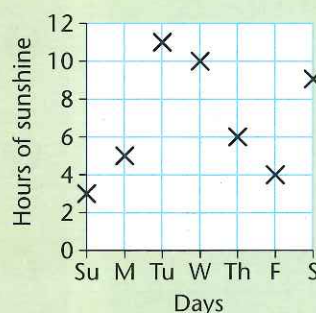
- 4 The number of minutes taken by a barber to cut the hair of eleven customers.

10 12 11 13 7 12
 13 6 14 10 13

- 5 The marks of ten children in their weekly spelling tests.

7 10 9 10 6
 8 10 6 9 10

- 6 The number of hours of sunshine each day in one week.



INTERPRETING THE MEAN 2

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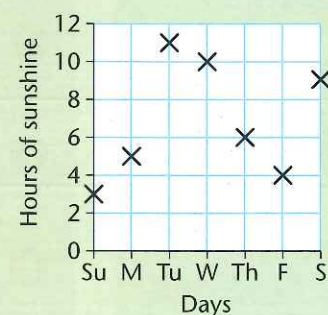
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8 10 6 9 10

- 6 The number of hours of sunshine each day in one week.



B

- 1 The opening batsman in a cricket team scored the highest number of runs in his team's innings. The other ten batsmen made the following scores.

1 35 17 0 15 40 0 8 1 0

The mean score for the eleven batsmen was 20. Find the opening batsman's score.

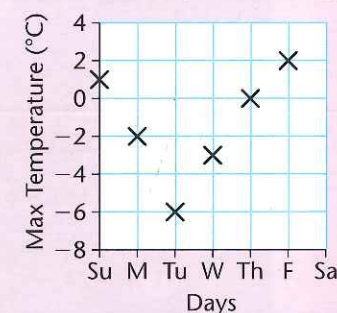


- 2 The first 12 customers at a booking office each bought the following number of cinema tickets.

2 1 3 16 1 4
1 5 4 1 7 2

After the 13th customer the mean number of tickets for each customer was 4. Find the number of tickets bought by the 13th customer.

- 3 The daily maximum temperatures recorded for six days in January.



When the temperature on Saturday was included the mean temperature for the week was -1°C . Find the Saturday temperature.

C

Investigating friction, Chloe let a marble roll down a ramp onto different surfaces to see how far it would roll. These are her results.

Test Number	Distance rolled on		
	Carpet	Wood	Plastic
1	1.5 m	4.7 m	3.3 m
2	1.3 m	4.5 m	?
3	1.1 m	5.0 m	2.9 m
4	1.7 m	4.3 m	3.5 m
5	1.4 m	4.8 m	3.1 m

- 1 Find the mean distance the marble rolled on:

a) carpet b) wood.

- 2 The mean distance rolled on plastic was 3.24 m. Find the missing result.

- 3 The monthly rainfall recorded in millimetres in one year in Jerusalem.

J	F	M	A	M	J	J	A	S	O	N	D
100	110	80	20	10	0	0	0	0	10	60	?

Including the missing December total, the mean rainfall for each month was 40 mm. Find the rainfall for December.

- 4 Louis rolled a dice 100 times. The table shows his scores.

Score	1	2	3	4	5	6
Frequency	14	20	18	15	16	17

Find the mean score.



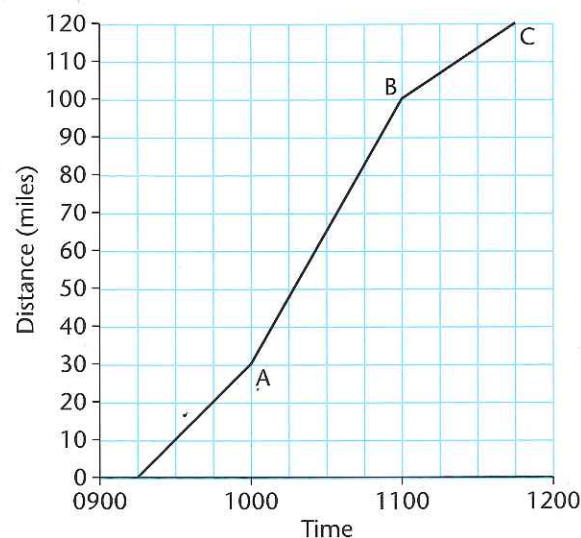
LINE GRAPHS - JOURNEYS

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TARGET To interpret line graphs showing journeys and use them to solve problems.

Example

This line graph shows a car journey from the driver's home to Camford.



- When does the journey begin?
Answer 09:15
- How far is it from the driver's home to A?
Answer 30 miles
- How far had the car travelled at:
a) 9:30 Answer 10 miles
b) 10:30? Answer 65 miles
- At what time does the car reach B?
Answer 11:00
- What is the distance from B to C?
Answer 20 miles
- Give the car's speed between A and B.
Answer 70 miles per hour

A

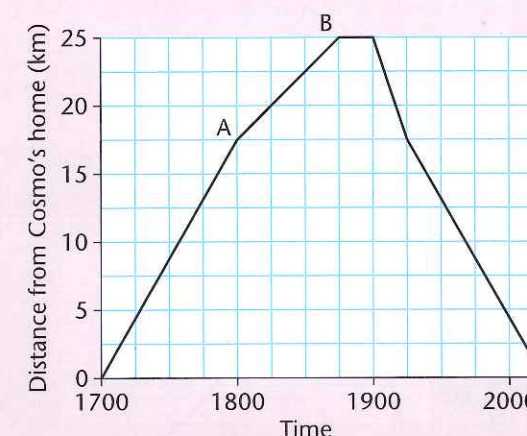
This graph shows Katina's car journey from Leeds to Stoke.



- How far is it from Leeds to Stoke?
- How far is it from the superstore to Stoke?
- At what time does Katina:
a) arrive at the superstore
b) arrive at Stoke?
- How long does she stop at the superstore?
- How long does the journey take:
a) from Leeds to the superstore
b) from the superstore to Stoke?
- How far has Katina travelled at 4pm?
- At what time does Katina pass a sign which tells her it is 10 miles to Stoke?
- Give the speed of the car from the superstore to Stoke.
- How long does the journey take altogether?

B

Cosmo cycles to the base of a tall hill (Point A), rides up to the summit (Point B), enjoys the view and then returns home.

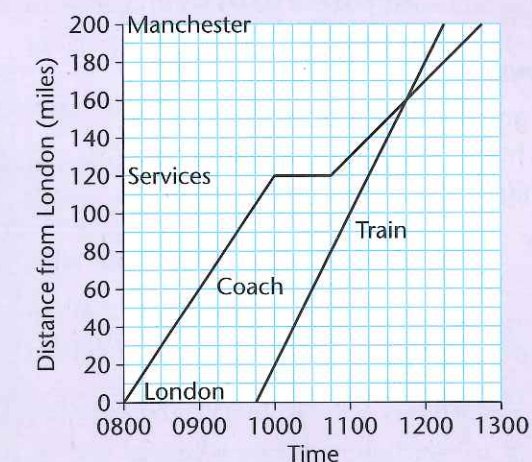


- How far is it from Cosmo's house:
a) to the base of the hill (A)
b) to the summit of the hill (B)?
- At what time did Cosmo:
a) begin the return journey
b) arrive back at home?
- How long did he spend enjoying the view?
- How long did it take him to cycle:
a) from his home to the base of the hill
b) from the base of the hill to the summit?
- Give the speed in kilometres per hour at which Cosmo cycled on his return journey:
a) from the summit to the base of the hill
b) from the base of the hill to his house?



C

This graph shows the journeys made by groups of football fans travelling from London to Manchester by coach or train.



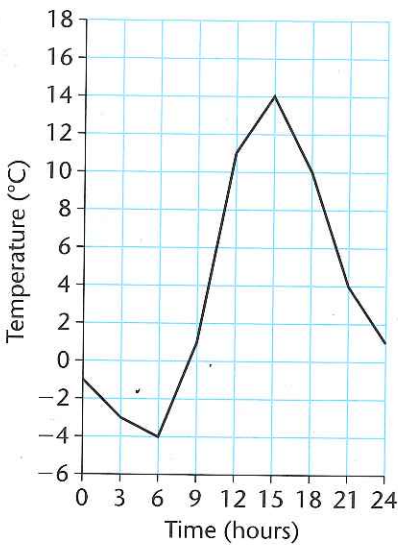
- At what time did:
a) the coach arrive at the motorway services
b) the train leave London?
- How far had the coach travelled before it stopped at the services?
- How long did the coach stop?
- How far had the train travelled when:
a) the coach arrived at the services
b) the coach left the services?
- How far apart were the coach and the train:
a) when the coach left the services
b) at 12:00
c) when the train arrived at Manchester?
- At what time had both coach and train travelled the same distance?
- What was the speed in mph of:
a) the coach from London to the services
b) the coach from the services to Manchester
c) the train?

(double sided)

LINE GRAPHS - TEMPERATURE

TARGET To interpret and construct line graphs involving changes in temperature.

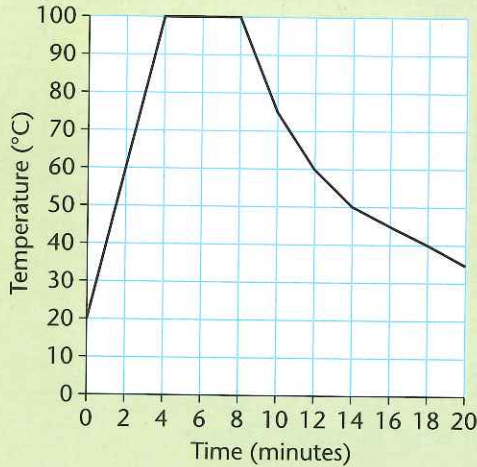
Example
This graph shows the temperature in a 24 hour period from midnight to midnight.



- 1 What is the temperature at 03:00?
Answer -3°C
- 2 How much does the temperature rise between 06:00 and 09:00?
Answer 5°C
- 3 When is a temperature of 14°C recorded?
Answer 15:00
- 4 How much does the temperature fall between 18:00 and 21:00?
Answer 6°C
- 5 Estimate two times when the temperature is 6°C.
Answer 10:30, 20:00

A

This graph shows the temperature of a saucepan of water heated until it is boiling and then left to cool.

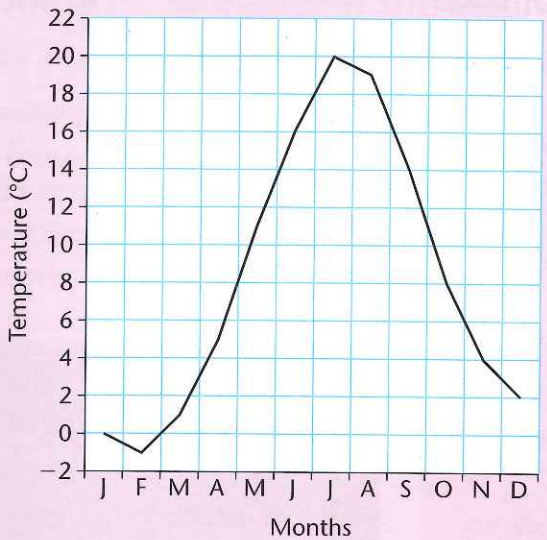


- 1 What is the temperature of the water before it is heated?
- 2 How long does it take for the temperature to reach 100°C?
- 3 After how many minutes does the water begin to cool?
- 4 Give the two times when the water temperature is 60°C.
- 5 How much does the water temperature fall between the 18th and 20th minute?
- 6 Estimate the water temperature at:
a) 1 minute b) 13 minutes.
- 7 Vicki tested the thermal insulating effectiveness of three containers, A, B and C. Draw a line graph to show her results for all three containers.

Time (minutes)	0	5	10	20	25	30
Water Temp. °C (A)	100	70	50	40	35	30
Water Temp. °C (B)	100	85	75	65	55	50
Water Temp. °C (C)	100	50	35	30	25	25

B

This line graph shows the average daily maximum temperature in Helsinki for one year.

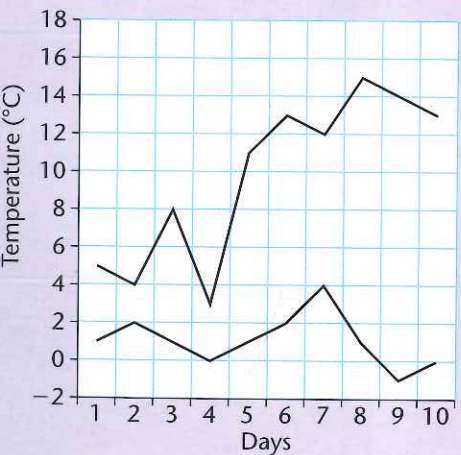


- 1 What was the temperature in:
a) September b) April?
- 2 In which month was the temperature:
a) 1°C b) 19°C?
- 3 What was the highest temperature?
- 4 In which month was the temperature below zero?
- 5 How much did the temperature:
a) rise between May and June
b) fall between November and December?
- 6 Between which two months was there:
a) the largest rise in temperature
b) the largest fall in temperature?
- 7 Use the table below to draw a line graph showing the average daily maximum temperature in Moscow in one year.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (°C)	-6	-5	3	11	19	22	26	23	17	9	2	-3

C

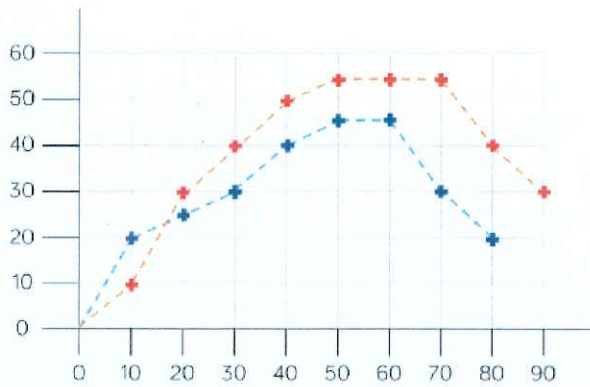
This line graph shows the daily maximum and minimum temperatures in Aberdeen for the first 10 days of January.



- 1 On which day was there:
a) the highest maximum temperature
b) the lowest minimum temperature?
- 2 What was:
a) the lowest maximum temperature
b) the highest minimum temperature?
- 3 What was the difference between the maximum and minimum temperatures on:
a) 3rd January b) 8th January?
- 4 On which day was the difference between the maximum and minimum temperatures:
a) largest b) smallest?
- 5 Use the table below to draw a line graph showing the daily maximum and minimum temperatures in New York for the first 10 days of January.

Days	1	2	3	4	5	6	7	8	9	10
Max. Temp. (°C)	4	1	2	2	0	3	4	5	5	3
Min. Temp. (°C)	1	-2	-3	-4	-5	-8	-11	-9	-10	-8

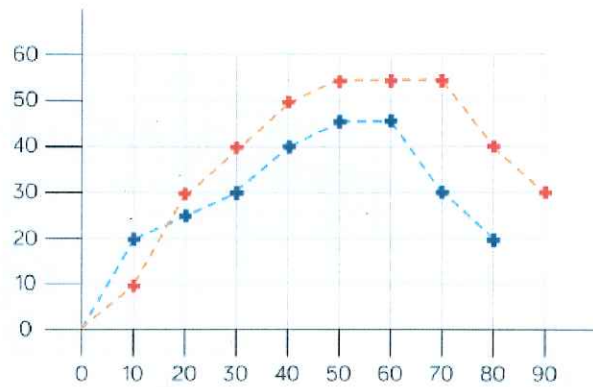
What could this graph be showing?



Label the horizontal and vertical axes to show this.

Is there more than one way to label the axes?

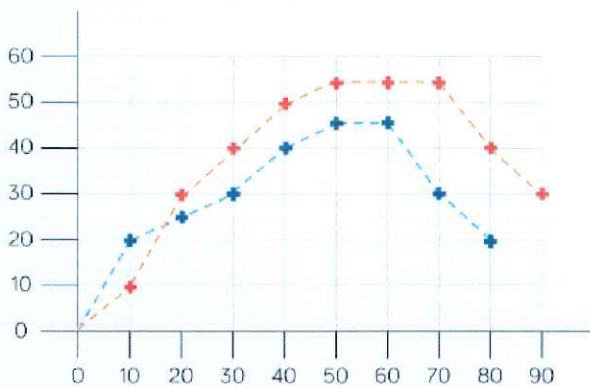
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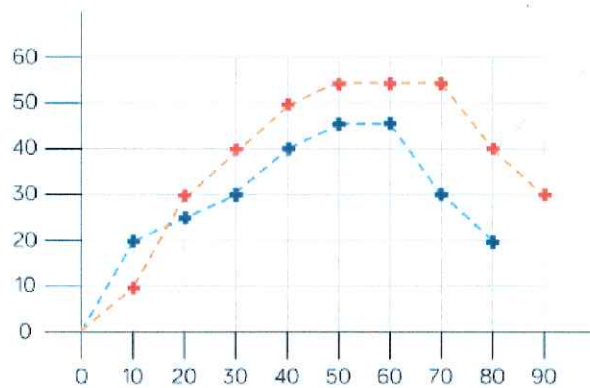
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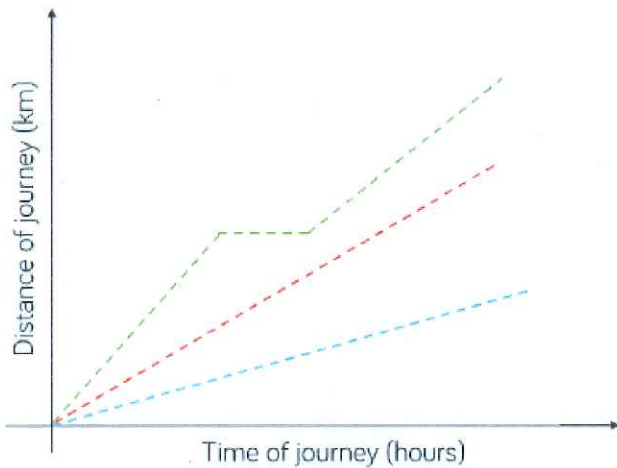
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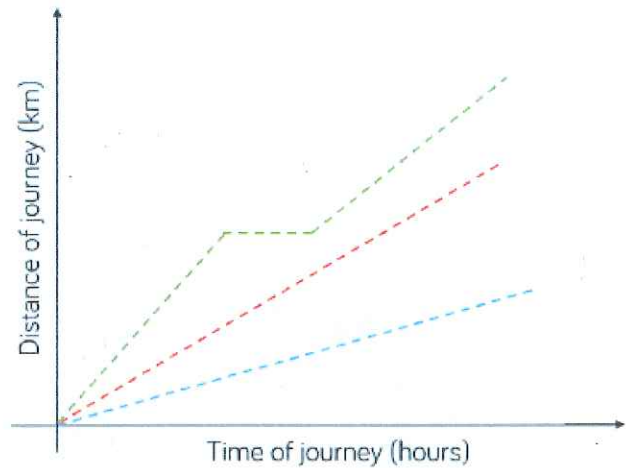
The graph below shows some of Mr Woolley's journeys.



What is the same and what is different about each of these journeys?

What might have happened during the green journey?

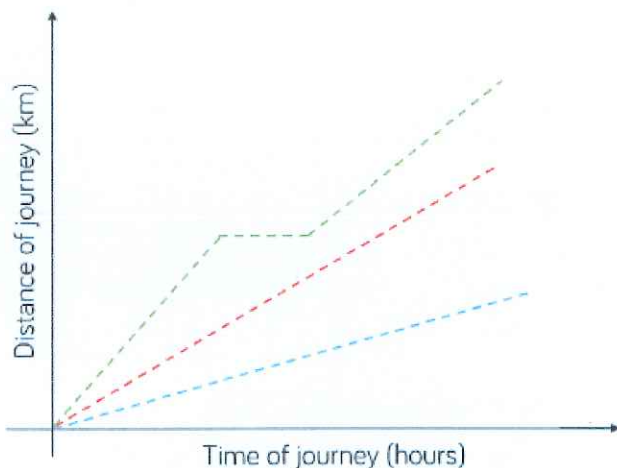
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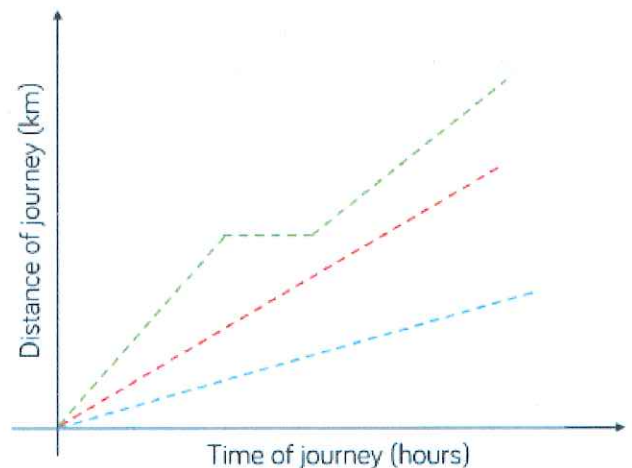
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