Worksheet - Line graphs and timetables

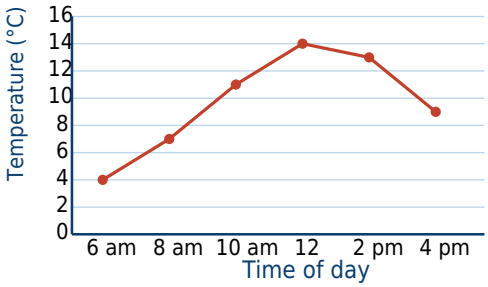
Year: Year 5 · 20

Show your working.

Question 1

Question 1 – Reading a line graph *(Section A · Practice)*

The line graph shows the temperature in a school playground.



a. What was the temperature at 10 am?
b. What was the highest temperature and at what time?
c. What was the temperature at 4 pm?
d. At what time was the temperature 7°C?

Question 2

Question 2 – Growth of a sunflower *(Section A · Practice)*

Ella measures her sunflower every week. The table shows its height in centimetres.

Week	Week 1	Week 2	Week 3	Week 4	Week 5
Height (cm)	5	12	25	41	60

a. How much did the sunflower grow between Week 1 and Week 2?
b. Between which two weeks did the sunflower grow the most?
c. How much did it grow in total from Week 1 to Week 5?
d. Without drawing, what scale would you use for the vertical axis of a line graph? Explain.

Question 3

Question 3 – Bus timetable *(Section A · Practice)*

Here is part of a bus timetable.

Place	Bus 1	Bus 2	Bus 3	Bus 4
Park	07:30	08:00	08:30	09:00

Place	Bus 1	Bus 2	Bus 3	Bus 4
Library	07:42	08:12	08:42	09:12
High Street	07:55	08:25	08:55	09:25
Station	08:10	08:40	09:10	09:40

a. When does Bus 3 leave the park?
b. When does Bus 2 reach the station?
c. How long does the bus take from the park to the station?
d. Nora wants to arrive at the station before 09:00. What is the last bus she can take from the park?

Question 4

Question 4 – The 24-hour clock *(Section A · Practice)*

Change these times. (a) 3:45 pm to the 24-hour clock (b) 9:20 pm to the 24-hour clock (c) 18:05 to the 12-hour clock with am or pm (d) 00:30 to the 12-hour clock (e) 12:15 pm to the 24-hour clock.

Question 5

Question 5 – How long? *(Section A · Practice)*

Work out how long each journey takes.

a. Leaves 09:15, arrives 11:40
b. Leaves 13:50, arrives 15:05
c. Leaves 07:25, arrives 08:00
d. Leaves 16:35, arrives 19:20

Question 6

Question 6 – Choosing a scale *(Section A · Practice)*

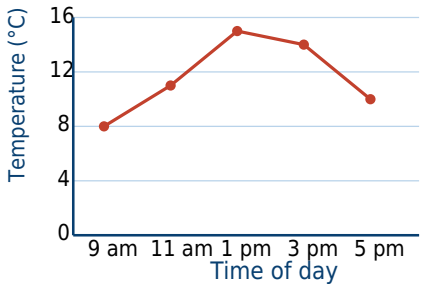
Three line graphs are to be drawn. Decide what scale you would use on the vertical axis for each set of data, and say how many squares are needed.

a. Temperatures: 3, 8, 15, 19, 12 (°C)
b. Savings: 5, 20, 35, 60, 85 (£)
c. Population of a village: 120, 150, 210, 240, 300
d. Sunflower heights as in the table above, 5 to 60 cm

Question 7

Question 7 – Water in the pond *(Section B · Real-life practice)*

Mia measures the temperature of the water in her garden pond on a summer day.

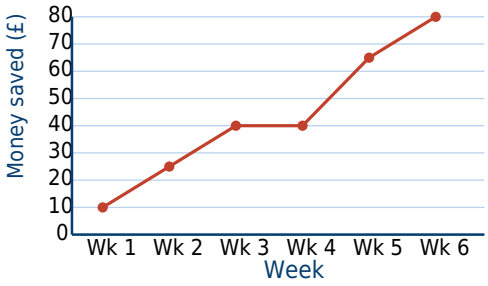


a. What was the highest temperature of the water and when did it happen?
b. How much did it rise from 9 am to 1 pm?
c. How much did it fall from 3 pm to 5 pm?
d. Estimate the temperature at 12 noon. Explain why this is only an estimate.

Question 8

Question 8 – Saving up for a bike *(Section B · Real-life practice)*

Sam is saving money for a new bike. The graph shows how much he has saved at the end of each week.



a. How much has Sam saved at the end of Week 3?
b. What happened between Week 3 and Week 4? Give a reason.
c. How much did Sam save between Week 4 and Week 6?
d. The bike costs £120. How much more must he save? If he saves the same amount each week as between Week 4 and Week 6, how many more weeks will he need?

Question 9

Question 9 – The school bus *(Section B · Real-life practice)*

The school bus timetable is shown below.

Place	Morning bus	Late bus
Oak Road	07:45	08:15
Park Lane	07:58	08:28
Mill Hill	08:12	08:42
School	08:30	09:00

a. At what time does the morning bus reach Mill Hill?
b. How long does the late bus take from Oak Road to the school?
c. School starts at 08:50. Which bus should Ali take from Park Lane to be on time? Explain.
d. Write the time the late bus reaches the school using am or pm.

Question 10

Question 10 – Train to the seaside *(Section B · Real-life practice)*

A family catches a train to the seaside. The timetable is shown.

Station	Train A	Train B	Train C
Leeds	09:05	10:05	11:35
York	09:35	10:35	12:05
Hull	10:25	11:25	12:55
Scarborough	11:20	12:20	13:50

a. How long does Train A take from Leeds to Scarborough?
b. Which train takes the longest from Leeds to Scarborough?
c. The family leaves home and reaches Leeds station at 10:00. Which is the first train they can catch?
d. How long do they wait at the station?
e. They want to arrive at 12:30 or earlier. Which trains arrive in time at Scarborough?

Question 11

Question 11 – Swimming gala times *(Section B · Real-life practice)*

The table shows the time in seconds for four swimmers over four lengths of the pool.

Swimmer	Length 1	Length 2	Length 3	Length 4
Ravi	28	30	32	35
Sue	27	29	33	36
Tom	30	31	31	32
Una	26	28	31	34

a. Who was fastest in Length 1?
b. What is Tom's total time for the four lengths?
c. Who had the fastest total time?
d. Whose times got slower with every length?

Question 12

Question 12 – Cinema timetable *(Section B · Real-life practice)*

The cinema shows three films today. The timetable is below.

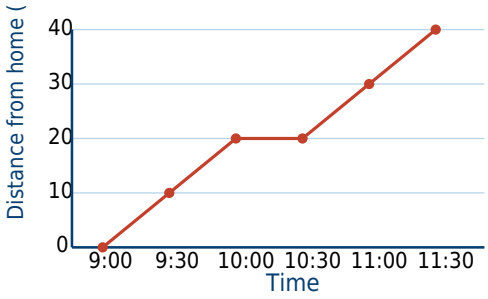
Film	Starts	Ends
Space Dogs	13:30	15:05
Pirate Island	15:40	17:55
Robot Race	18:20	20:10

a. How long is Space Dogs?
b. How long is Pirate Island?
c. Hana arrives at the cinema at 3:15 pm. Which film can she see first? Write the time in the 24-hour clock.
d. How long is the break between the end of Pirate Island and the start of Robot Race?
e. Which film is the longest?

Question 13

Question 13 – A cycling trip *(Section B · Real-life practice)*

Rob cycles along a road. The graph shows how far he is from home during the morning.

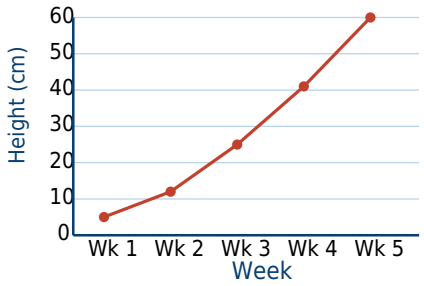


a. How far from home is Rob at 10:00?
b. What does the flat part of the line between 10:00 and 10:30 tell you?
c. How far does he cycle between 10:30 and 11:30?
d. Rob says he cycled at the same speed all morning. Is he right? Use the graph to explain.

Question 14

Question 14 – Measuring the sunflower *(Section B · Real-life practice)*

Ella plots the height of her sunflower on a line graph.



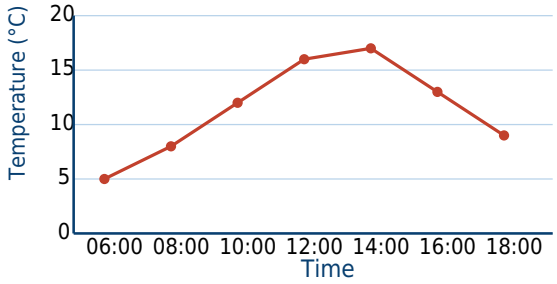
a. How tall was the sunflower at the end of Week 3?
b. In which week did it grow the most?
c. Estimate the height halfway between Week 2 and Week 3.
d. Ella says that the sunflower will be 80 cm tall at Week 6 if it grows 20 cm. Is this a sensible estimate based on the graph? Explain.

Question 15

Question 15 – A day in the weather station *(Section C · Problem solving)*

A weather station records the temperature every two hours. The table is shown below.

Time	06:00	08:00	10:00	12:00	14:00	16:00	18:00
Temperature (°C)	5	8	12	16	17	13	9



a. What was the temperature at 14:00?
b. Between which times was the rise the biggest? How big was it?
c. How much did the temperature fall from 14:00 to 18:00?
d. Estimate the temperature at 09:00. Explain how you chose.
e. Write 16:00 using am or pm and say what the temperature was then.

Question 16

Question 16 – Planning a journey *(Section C · Problem solving)*

The Patel family travels from Bristol to Edinburgh. They take a train from Bristol to Birmingham and then a second train to Edinburgh. Part of the timetable is shown.

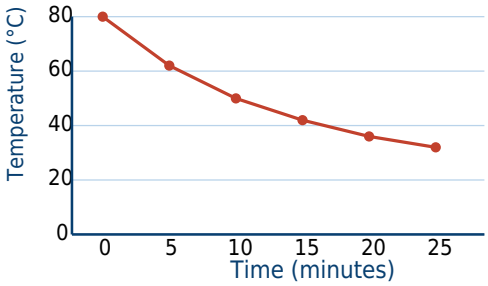
Journey	Leaves	Arrives
Bristol to Birmingham	08:20	09:35
Birmingham to Edinburgh	10:05	14:50

a. How long does the first train take?
b. How long do the family wait for the second train in Birmingham?
c. How long does the second train take?
d. What is the total time from leaving Bristol to arriving in Edinburgh?
e. The family wants to be in Edinburgh by 14:00. Is that possible with these trains? If not, how late are they?
f. Write the arrival time in Edinburgh using am or pm.

Question 17

Question 17 – Cooling hot chocolate *(Section C · Problem solving)*

Dan measures how a cup of hot chocolate cools down. The graph shows the temperature every 5 minutes.



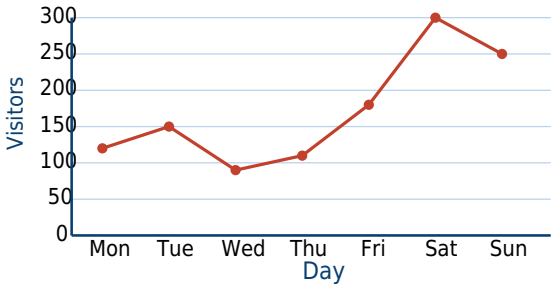
a. What was the temperature after 10 minutes?
b. How much did the temperature fall in the first 5 minutes?
c. How much did the temperature fall between 20 and 25 minutes?
d. Is the fall in temperature faster at the start or at the end? Use your answers to explain.
e. Estimate the temperature after 12 minutes. Dan likes his drink at 45°C. After about how many minutes is it ready?

Question 18

Question 18 – Visitors to the museum *(Section C · Problem solving)*

The museum counts visitors each day for a week. A line graph has been drawn from the table.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Visitors	120	150	90	110	180	300	250



a. Which day had the most visitors and which the fewest?
b. Between which two days was the biggest rise? How big was it?
c. Between which two days did the number of visitors fall the most?
d. How many visitors came over the whole week?
e. The museum needs on average more than 170 visitors a day to stay open. Does it reach this? Show your working.

Question 19

Question 19 – Holiday plans *(Section C · Problem solving)*

The Evans family fly from Manchester to Malaga. The timetable shows their travel plan. Times are in the 24-hour clock and the local time in Spain is the same as in Britain for this question.

Part of journey	Leaves	Arrives
Taxi to the airport	04:45	05:30
Wait at the airport	05:30	07:15
Flight	07:15	10:50
Bus to the hotel	11:30	12:20

a. How long do they wait at the airport?
b. How long is the flight?
c. How long do they wait for the bus after landing?
d. How long is the whole journey from leaving home to arriving at the hotel?
e. The bus ride is the same length as the taxi ride. Is that right? Explain.

Question 20

Question 20 – Challenge: buses every 25 minutes *(Section D · Challenge)*

A bus leaves the market place at 07:10 and then every 25 minutes after that.

a. Write down the times of the first six buses.
b. What time is the bus after the one at 08:25?
c. Mark is 10 minutes late for the 08:25 bus. How long must he wait for the next bus?
d. One bus leaves at exactly 10:05. Is that part of this timetable? Show your counting.