Reasoning and Problem Solving
Step 5: Introducing Line Graphs

National Curriculum Objectives:

Mathematics Year 4: (4S1) Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
Mathematics Year 4: (4S2) Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Explain whether or not a line graph is correct. Using up to 3 recordings per graph with increments of 1 or 2 on the y axis.
Expected Explain whether or not a line graph is correct. Using up to 5 recordings per graph with increments of 1, 2 or 10 on the y axis.
Greater Depth Explain whether or not a line graph is correct. Using up to 5 recordings per graph with increments of 1, 2 or 10 on the y axis where not all increments are marked and where recordings are sometimes between marked increments.

Questions 2, 5 and 8 (Reasoning)
Developing Compare two factual statements when reading line graphs. Explain which is correct. Using up to 3 recordings per graph with increments of 1 or 2 on the y axis.
Expected Compare two analytical statements when reading line graphs. Explain which is correct. Using up to 5 recordings per graph with increments of 1, 2 or 10 on the y axis.
Greater Depth Compare two overarching or analytical statements when reading line graphs. Explain which is correct. Using up to 5 recordings per graph with increments of 1, 2 or 10 on the y axis where not all increments are marked and where recordings are sometimes between marked increments.

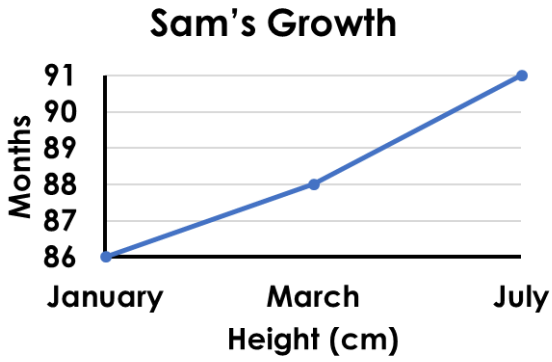
Questions 3, 6 and 9 (Problem Solving)
Developing Decide which line on the graph (from a choice of 2) matches the written narrative. Using up to 3 recordings per graph with increments of 1 or 2 on the y axis.
Expected Decide which line on the graph (from a choice of 3) matches the written narrative. Using up to 5 recordings per graph with increments of 1, 2 or 10 on the y axis.
Greater Depth Decide which line on the graph (from a choice of 4) matches the written narrative. Using up to 5 recordings per graph with increments of 1, 2 or 10 on the y axis where not all increments are marked and where recordings are sometimes between marked increments.

More Year 3 and Year 4 Statistics resources.

Did you like this resource? Don't forget to review it on our website.

Introducing Line Graphs

1a. Freya makes a line graph to show the growth of her younger brother Sam over three months. Is it correct? Explain your answer.

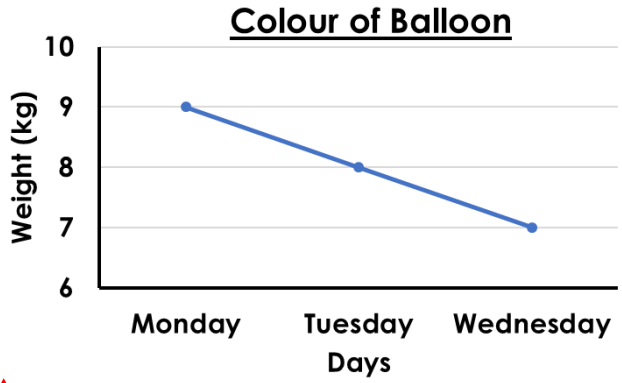


D

4 R

Introducing Line Graphs

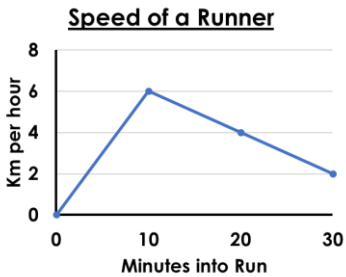
1b. Stefan makes a line graph to show how much a balloon shrinks as it deflates over three days. Is it correct? Explain your answer.



D

4 R

2a.



Greg

At 10 mins he is running at 4km per hour.

At 10 mins he is running at 6km per hour.

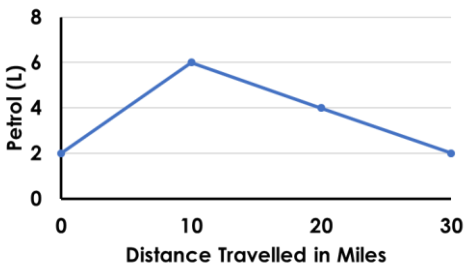
Heidi

D

Explain who is correct.

4 R

2b.



Talia

At 20 miles, the car had used 20 litres of petrol.

The car ran out of petrol at 30 miles.

Deni

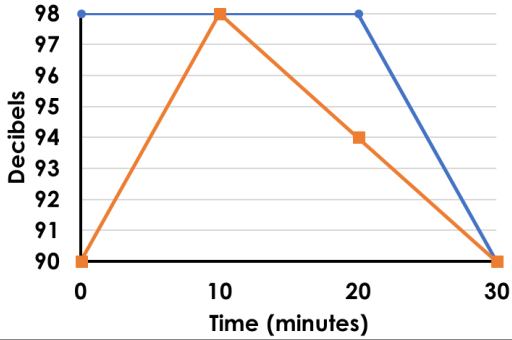
D

Explain who is correct.

4 R

3a. A music festival measured how loud a rock group played in decibels during their performance. They started off quietly, then got louder and ended quietly.

Which line on the graph shows what happened?

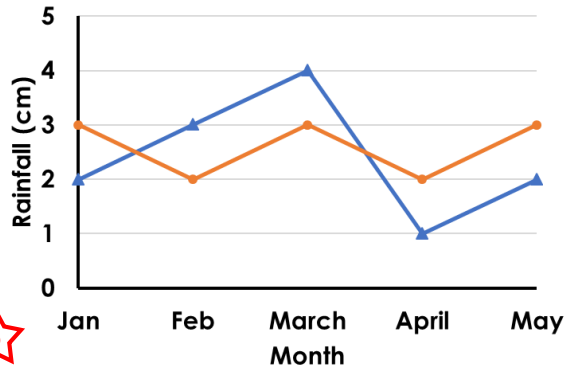


D

4 PS

3b. Jessica measured the rainfall over four months. She recorded a different amount of rainfall for each month.

Which line on the graph shows what happened?

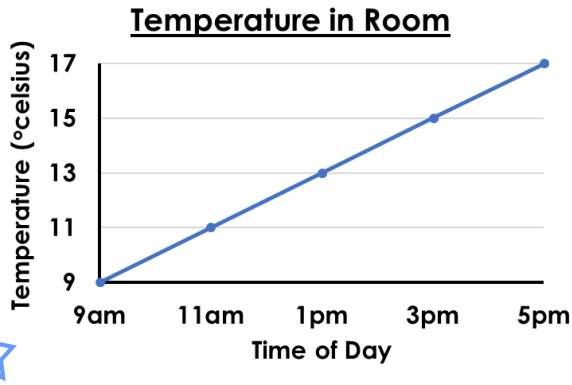


D

4 PS

Introducing Line Graphs

4a. Ibrahim makes a line graph to show how the temperature in a room increased at first, was hottest in the early afternoon and cooled off again later on. Is it correct? Explain your answer.

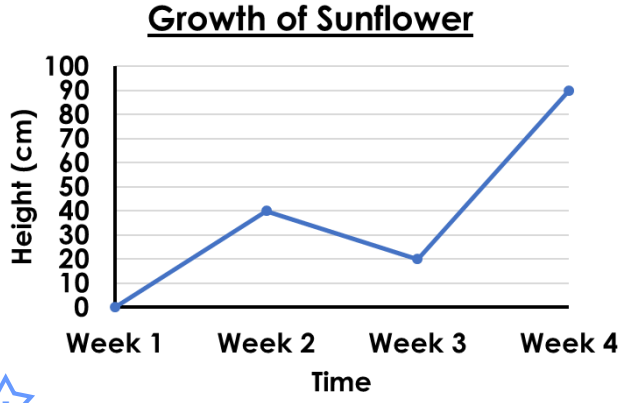


E

4 R

Introducing Line Graphs

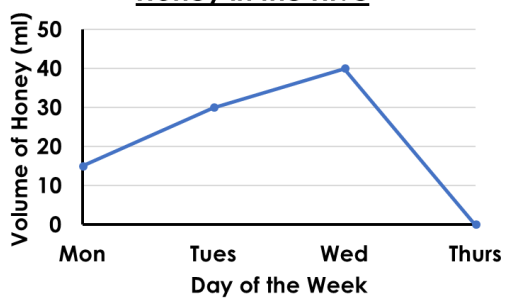
4b. Isma makes a line graph to show the growth in height of a sunflower over a month. Is it correct? Explain your answer.



E

4 R

5a.



Hakeem

On Wednesday, there was 40ml of honey.

Thursday is honey collection day.

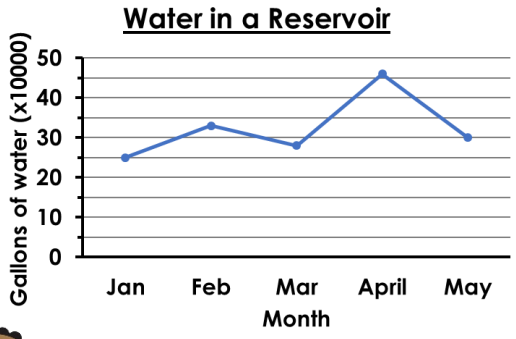
Hannah

Explain who is correct.

E

4 R

5b.



Mylo

The water increases as the year goes on.

The most water was recorded in April.

Luke

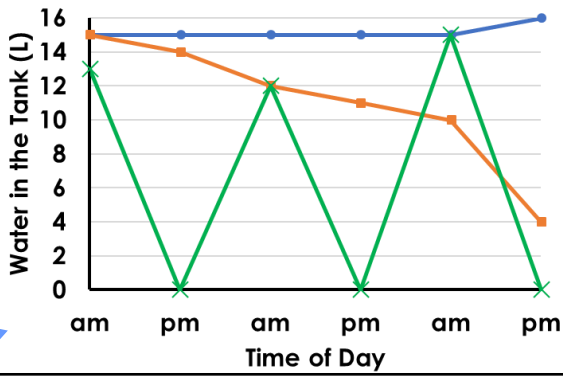
Explain who is correct.

E

4 R

6a. Every day, Jim empties the rain from his EcoTank to water his garden.

Which line on the graph shows what happens to the volume of water in the tank?

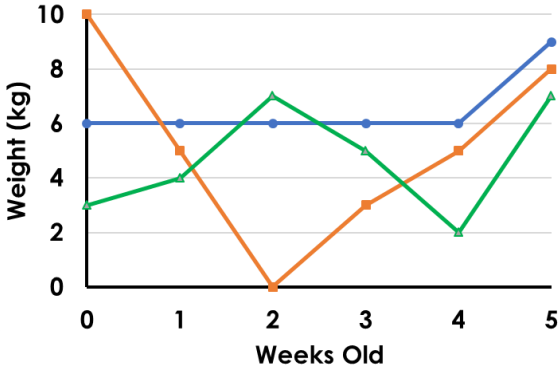


E

4 PS

6b. A farmer is worried about his lamb. Its weight has dropped since it was 2 weeks old. By 5 weeks, it is fully recovered.

Which line on the graph shows the weight?

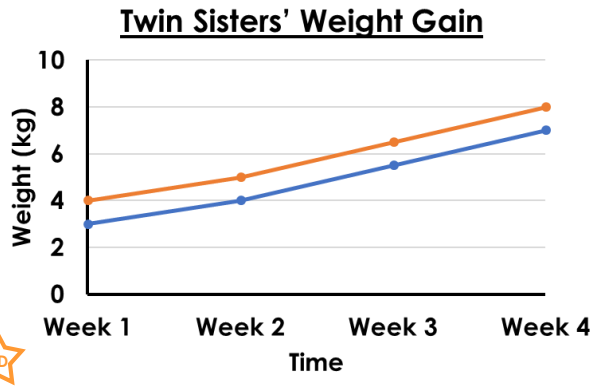


E

4 PS

Introducing Line Graphs

7a. Julia makes a line graph to show how much weight her twin baby sisters put on over a month. One of the babies puts on weight quicker than the other. Is the line graph correct? Explain your answer.

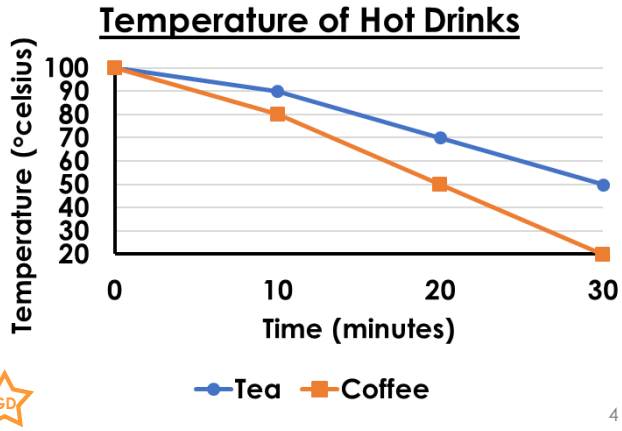


GD

4 R

Introducing Line Graphs

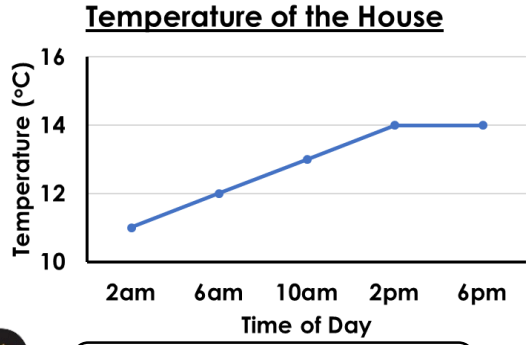
7b. Daniel makes a line graph to show the temperature of a cup of tea and a cup of coffee as they cool down. The tea cools down quicker than the coffee.



GD

4 R

8a.



Zahara

There can't be two 2 o'clock readings.

The readings are warmer when everyone is awake.

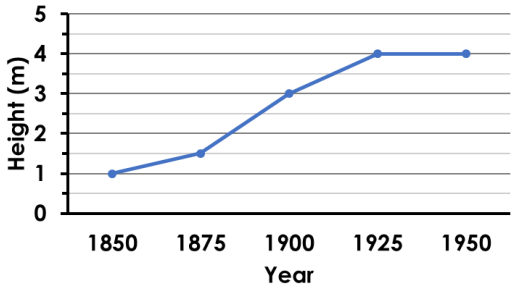
Lou

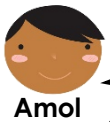
Explain who is correct.

GD

4 R

8b.





Amol

By 1925, the Oak was fully grown.

Between1850 and 1875, the oak grew 50cm.

Grace

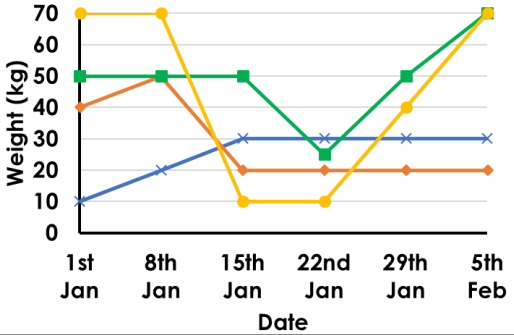
Explain who is correct.

GD

4 R

9a. A weightlifter records his recovery after an injury. It takes him 1 week to return to lifting and 2 more to recover fully.

Which line on the graph shows what happened?

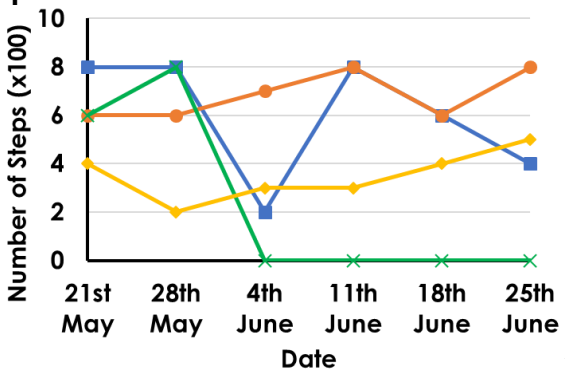


GD

4 PS

9b. Alex's pedometer keeps tracking the number of steps while he is away on holiday, even though he left it at home.

Which line on the graph shows what happened?



GD

4 PS

Reasoning and Problem Solving
Introducing Line Graphs

Developing

1a. The line graph is incorrect because the labels on the axes have been swapped and the months should be consecutive.

2a. Heidi is correct because she has read the minutes on the x axis and the speed on the y axis.

3a. The orange line (with square markers) shows this scenario accurately as it increases and then decreases.

Expected

4a. The line graph is incorrect because the line should increase in the morning and gradually decrease in the afternoon.

5a. Hakeem is correct as he has correctly read from the scale that 40ml of honey is in the hive on Wednesday. Grace could also be correct as the amount of honey is 0 on Thursday.

6a. The green line (with x markers) shows the water in the EcoTank as it is emptied once each day.

Greater Depth

7a. The line graph is incorrect because one line should show a steeper increase than the other.

8a. Lou is correct because the warmest temperatures are between 10am-6pm.

9a. The yellow line (with circular markers) shows the weight lifter's recovery; he has his injury around 8th Jan and rests for one week, then builds back up by 5th Feb.

Reasoning and Problem Solving
Introducing Line Graphs

Developing

1b. The line graph is incorrect because the title should say 'Size of Balloon' and the label for the y axis should say 'Size (cm)'.

2b. Talia is correct because she has read the point where the line crosses 4l as 20 miles.

3b. The blue line (with triangular markers) shows this scenario accurately as there was a different amount of rainfall each month.

Expected

4b. The line graph is incorrect because the line should continuously increase or remain the same, not have a 'dip' in the middle.

5b. Luke is correct because the graph shows the most gallons of water recorded in April.

6b. The green line (with triangular markers) shows the lamb's weight as there is an increase between its birth and 2 weeks when it became ill.

Greater Depth

7b. The line graph is incorrect because it should be the line for tea that decreases quicker than the line for coffee.

8b. Amol could be correct as the oak's growth remains at 4 metres for 25 years after 1925, so it is likely fully grown. Grace is also correct as the oak has grown half a metre (50cm) between 1850 and 1875.

9b. The green line (with x markers) shows Alex's pedometer – he is on holiday so does not record any steps from 4th June onwards.