Reasoning and Problem Solving
Step 4: 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 if a statement about a line graph is correct or not, using increments of 1 on the y axis. Using up to 5 recordings per graph.
Expected Explain if a statement about a line graph is correct or not, using increments of 2 and 10 on the y axis, with some use of half intervals. Using up to 8 recordings per graph.
Greater Depth Explain if a statement about a line graph is correct or not, using increments of 2, 5 and 10 on the y axis, where not all increments are marked, use of half intervals. Using up to 8 recordings per graph.

Questions 2, 5 and 8 (Problem Solving)
Developing Find a given difference on a line graph, using increments of 1 on the y axis, with some use of half intervals. Using up to 8 recordings per graph.
Expected Find a given a difference on a line graph, using increments of 2 and 10 on the y axis, with some use of half intervals. Using up to 8 recordings per graph.
Greater Depth Find a given a difference on a line graph, using increments of 2, 5 and 10 on the y axis, where not all increments are marked, use of half intervals. Using up to 8 recordings per graph.

Questions 3, 6 and 9 (Reasoning)
Developing Find and explain a point on a graph where a change occurred, using increments of 1 on the y axis. Using up to 5 recordings per graph.
Expected Find and explain a point on a graph where a change occurred, using increments of 2 and 10 on the y axis, with some use of half intervals. Using up to 8 recordings per graph.
Greater Depth Find and explain a point on a graph where a change occurred, using increments of 2, 5 and 10 on the y axis, where not all increments are marked, use of half intervals. Using up to 8 recordings per graph.

More Year 4 Statistics resources.

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

classroomsecrets.co.uk

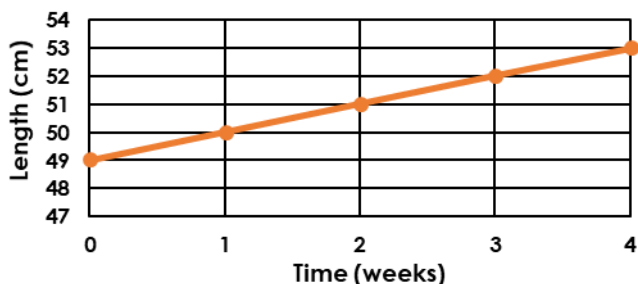**Reasoning and Problem Solving – Line Graphs – Teaching Information**

Line Graphs

1a. Rob is talking about the line graph below.

> The difference in the height of the child between 1 week and 4 weeks is 4 centimetres.

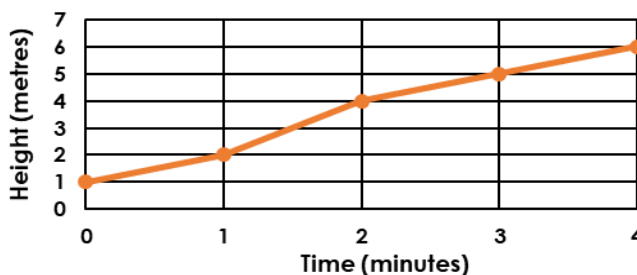**Length of Baby**

Is Rob correct? Explain why.

⭐ (D)   R

Line Graphs

1b. Sophie is talking about the line graph below.

> The difference in height between 1 minute and 3 minutes is 3 metres.
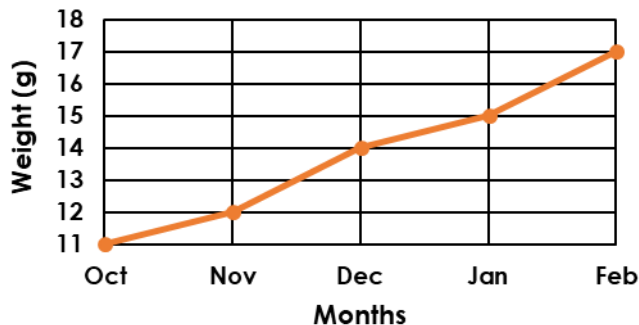
Growth of Jack's Beanstalk

Is Sophie correct? Explain why.

⭐ (D)   R

2a. Use the graph to complete the sentence.

Weight of a Corn Snake

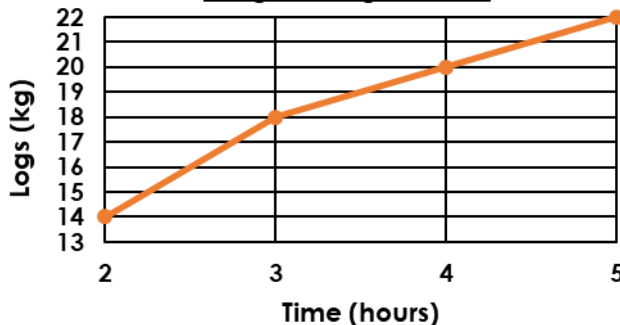Between ____ and ____, the difference in the weight is 2 grams.

⭐ (D)   PS

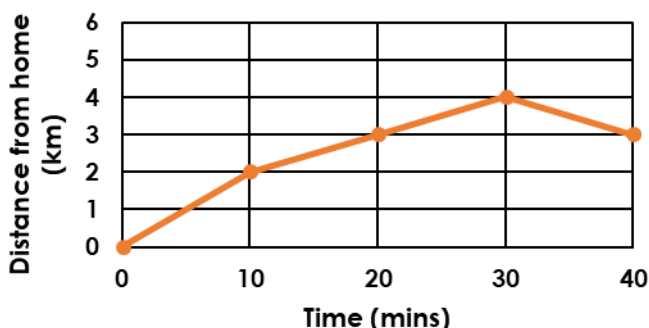**2b.** Use the graph to complete the sentence.

Weight of Logs Burned

Between ____ and ____ hours, 6kg of logs are burned.

⭐ (D)   PS

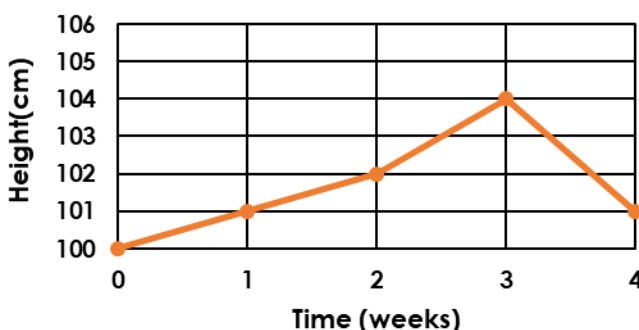**3a.** When did George turn around and head back home?

George's Cycle Ride

Explain your answer.

⭐ (D)   R

3b. When was the hedge trimmed?

Height of a Hedge

Explain your answer.

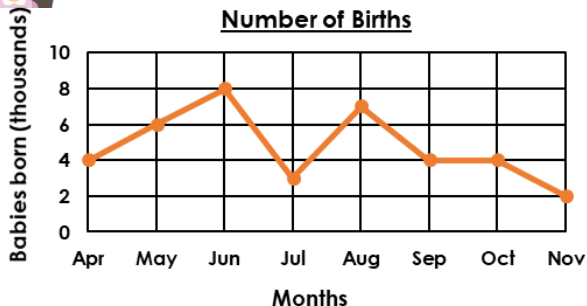⭐ (D)   R

Line Graphs

4a. Ellie is talking about the line graph below.

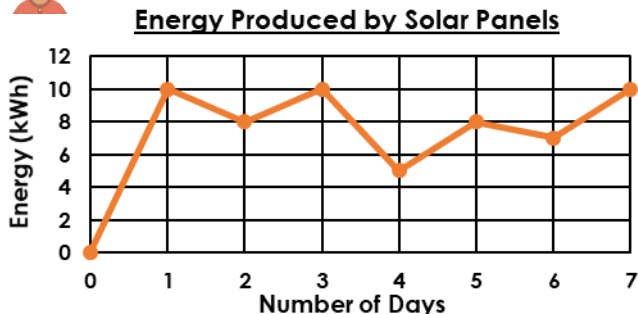> There were 2,000 fewer babies born in June than in May.

Number of Births

Is Ellie correct? Explain why.

E   R

4b. Vihan is talking about the line graph below.
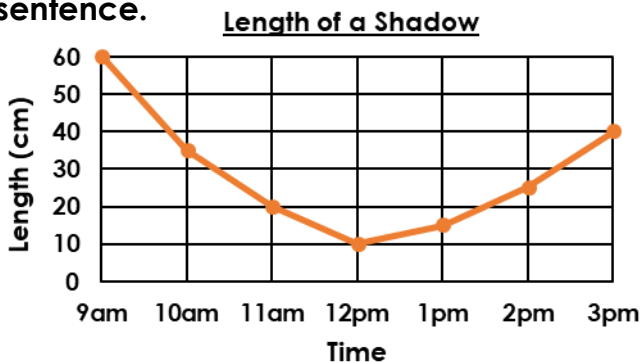
> There were 2 days when 10 kWh of energy was produced.

Energy Produced by Solar Panels

Is Vihan correct? Explain why.

E   R

5a. Use the graph to complete the sentence.
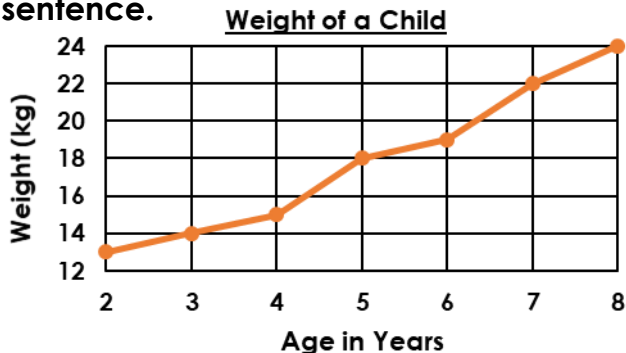
Length of a Shadow

Between ____ and ____, the difference in the length of the shadow is 15cm.
Find all the possible answers.
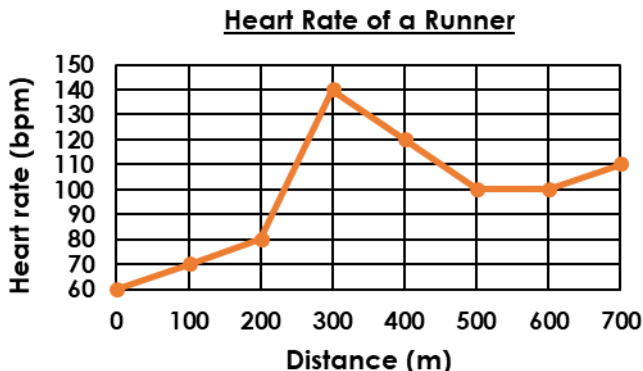
E   PS

5b. Use the graph to complete the sentence.

Weight of a Child

Between ____ and ____, the difference in the child's weight is 5kg.
Find all the possible answers.

E   PS

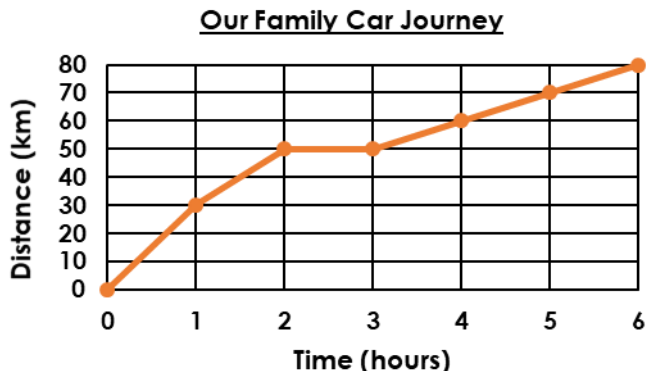**6a.** When is it most likely that the runner sprinted for 100m?

Heart Rate of a Runner

Explain your answer.

E   R

6b. In which hour is it most likely that the family stopped for a break?

Our Family Car Journey

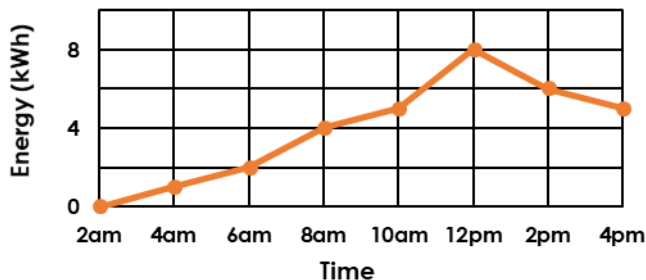Explain your answer.

E   R

Line Graphs

7a. Ben is talking about the line graph below.

> The difference in the energy produced between 6am and 10am is 1 kWh.

Energy Produced by Solar Panels
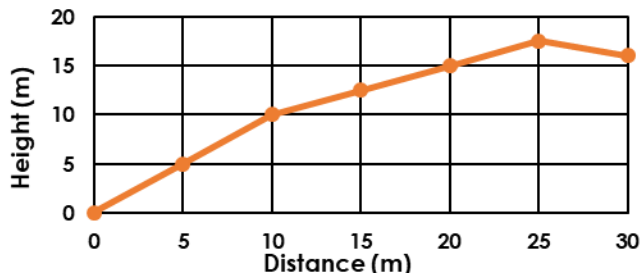

Is Ben correct? Explain why.

GD

R

7b. Isra is talking about the line graph below.

> The difference in the highest point and the lowest point the javelin reached is more than 15m.
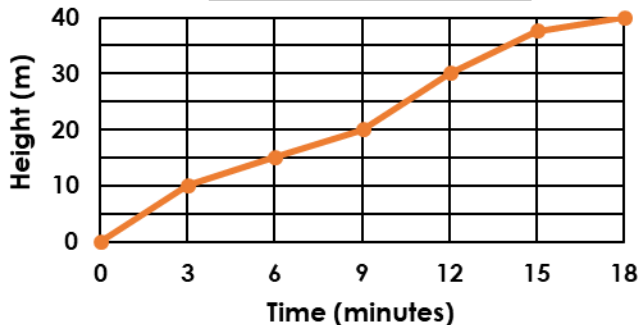
Measuring a Javelin Throw

Is Isra correct? Explain why.

GD

R

8a. Use the graph to complete the sentence.
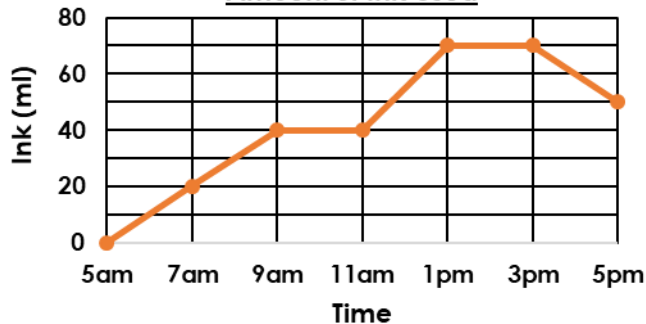
Speed of a Rock Climber

Between ____ and ____ minutes, the difference in the metres climbed was 10m. Find all the possible answers.

GD

PS

8b. Use the graph to complete the sentence.
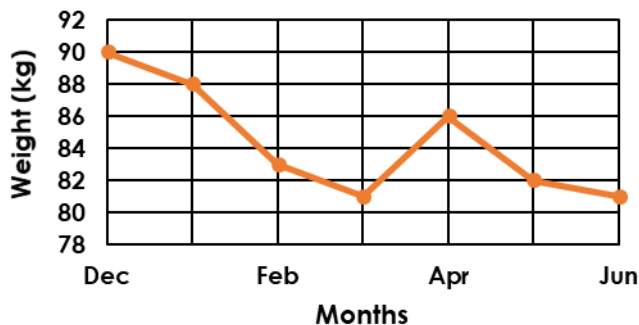
Amount of Ink Used

Between ____ and ____, the difference in the number of millilitres used is 30ml. Find all the possible answers.

GD

PS

9a. When is it most likely that Karl did not exercise as much?
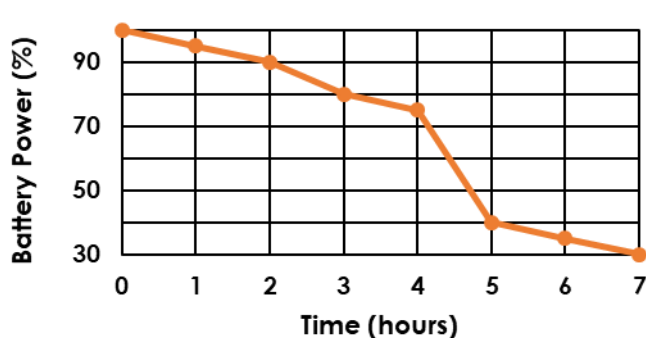
Karl's Weight Loss

Explain your answer.

GD

R

9b. When is it most likely that the screen was brighter for an hour?

Battery Life of a Laptop

Explain your answer.

GD

R

Reasoning and Problem Solving
Line Graphs

Developing

1a. Rob is not correct because the baby was 50cm at week 1 and 53cm at week 4. 53 – 50 = 3cm.

2a. November and December; January and February

3a. After 30 minutes because the distance from home starts to decrease.

Expected

4a. Ellie is not correct because there were 6,000 babies born in May and 8,000 babies born in June. There were 2,000 more babies born in June.

5a. 10am and 11am; 2pm and 3pm

6a. Between 200m and 300m because the runner's heart rate increases quickly over a distance of 100m.

Greater Depth

7a. Ben is not correct because The energy produced at 6am was 2 kWH and the energy produced at 10am was 5 kWH. 5 kWh – 2 kWh = 3 kWh.

8a. 0 and 3 minutes; 3 and 9 minutes; 9 and 12 minutes; 12 and 18 minutes

9a. Between March and April because his weight increased.

Reasoning and Problem Solving
Line Graphs

Developing

1b. Sophie is correct because after 1 minute the beanstalk was 2m high and after 3 minutes it was 5m high. 5m – 2m = 3m.

2b. 2 and 4 hours

3b. The hedge was trimmed in week 3 because in week 3 it was 104cm tall and in week 4 it was only 101cm tall.

Expected

4b. Vihan is not correct because there are 3 days when 10 kWh are produced. 10kWh are produced on day 1, 3 and 7.

5b. 2 and 5; 3 and 6; 6 and 8

6b. Between 2 and 3 hours because the car does not travel any further, remaining at 50km.

Greater Depth

7b. Isra is correct because the highest point the javelin reached was above 15m (17.5m) and its lowest point was 0m.

8b. 7am and 5pm; 9am and 1pm; 9am and 3pm; 11am and 1pm; 11am and 3pm

9b. Between 4 and 5 hours because the power of the battery reduces quickly.