Reasoning and Problem Solving
Step 2: Draw Line Graphs

National Curriculum Objectives:

Mathematics Year 5: (5S1) Complete, read and interpret information in tables, including timetables
Mathematics Year 5: (5S2) Solve comparison, sum and difference problems using information presented in a line graph

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Use knowledge of line graphs to determine whether an appropriate axis scale has been used. Scales are multiples of 2.
Expected Use knowledge of line graphs to determine whether an appropriate axis scale has been used. Scales are multiples of 10.
Greater Depth Use knowledge of line graphs to determine whether an appropriate axis scale has been used.

Questions 2, 5 and 8 (Problem Solving)
Developing Complete a line graph to include missing data. Including one set of data and given scales of 1, 2 or 10 where points fall on marked increments.
Expected Complete a line graph to include missing data. Including one set of data and any scale where most points fall on marked increments.
Greater Depth Complete a line graph to include missing data. Including one set of data and any scale where most points fall between marked increments. Scales may not be given.

Questions 3, 6 and 9 (Problem Solving)
Developing Draw a line graph using the given information. Scales are multiples of 2 or 10.
Expected Draw a line graph using the given information.
Greater Depth Draw a line graph where exact measurements are not given.

More Year 5 Statistics Resources.

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

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Draw Line Graphs

1a. Roger is creating a line graph to show the population growth in Beijing from 2000 to 2004.

The population in 2000 was 10 million. At its highest in 2004, it was 13 million. I will use intervals of 2 million for the population axis.

Will his line graph work? Draw a line graph to help you explain why.

D

R

Draw Line Graphs

1b. Aleia is creating a line graph to show the average speed of a train in a 10 minute period.

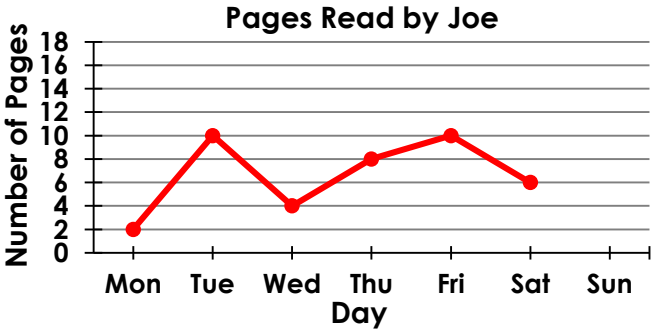
The average speed of the train was 20mph at 1 minute. It reached its maximum speed of 60mph at 10 minutes. I will use intervals of 10mph for the speed axis.

Will her line graph work? Draw a line graph to help you explain why.

D

R

2a. Part of this line graph is missing. It should show all the days of the week.

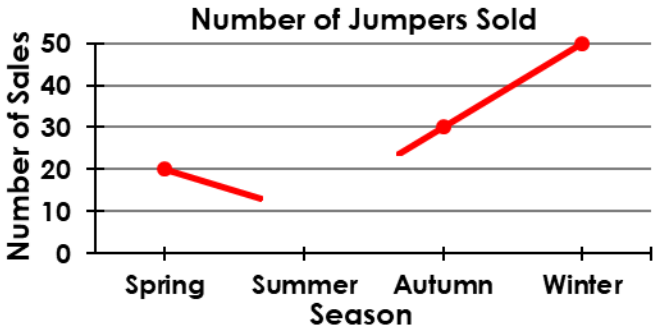


If Jo read more on Sunday than any other day, how many pages could he have read? Draw the completed line graph.

D

PS

2b. Part of this line graph is missing. It should show the sales in each season.



How many sales could have been made in summer? Draw the completed line graph.

D

PS

3a. Toby has created a line graph to show how many steps he took in a 5 hour period.

He says,

My line graph uses increments of 1,000 steps. The two titles I have used are 'Numbers of Steps' and 'Hour'. I walked 1,000 steps per hour.

Use these pieces of information to draw a line graph.

D

PS

3b. Ling has created a line graph to show the number of kilometres she walked each day for 5 days.

She says,

My line graph uses increments of 1km. The two titles I have used are 'Distance (km)' and 'Day'. I walked 2km every day.

Use these pieces of information to draw a line graph.

D

PS

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Draw Line Graphs

4a. Sammy is creating a line graph to show the population growth in Dublin from 2014 to 2018.

The population in 2014 was 1 million. At its highest in 2018, it was 1,200,000. I will use intervals of 100,000 for the population axis.

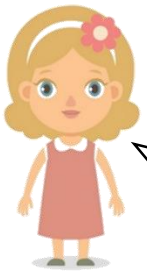
Will his line graph work? Draw a line graph to help you explain why.

E

R

Draw Line Graphs

4b. Deanna is creating a line graph to show the average speed of a boat in a 10 minute period.



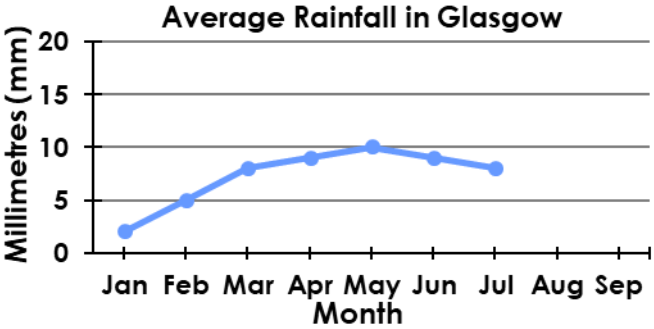
The speed of the boat was 10mph at 1 minute. It reached its maximum speed of 47mph at 10 minutes. I will use intervals of 20mph for the speed axis.

Will her line graph work? Draw a line graph to help you explain why.

E

R

5a. Part of this line graph is missing. It should show from January to September.

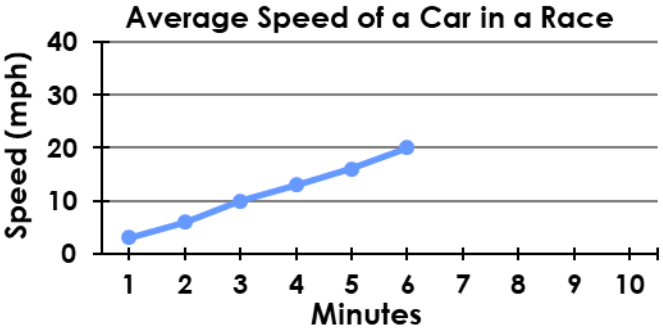


If the graph continues to fall at the same rate, what is the average rainfall in August? Draw the completed line graph.

E

PS

5b. Part of this line graph is missing. It should show 10 minutes of the car race.



If the graph continues in the same way, when will it reach an average speed of 30mph? Draw the completed line graph.

E

PS

6a. Axel has created a line graph to show how many steps he took in a 5 hour period.

He says,

My line graph uses increments of 400 steps. The two titles I have used are 'Numbers of Steps' and 'Hour'. I walked 800 steps per hour.

Use these pieces of information to draw a line graph.

E

PS

6b. Katie has created a line graph to show the number of kilometres she walked in 5 days.

She says,

My line graph uses increments of 3km. The two titles I have used are 'Distance (km)' and 'Hour'. I walked 3km every hour.

Use these pieces of information to draw a line graph.

E

PS

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Draw Line Graphs

7a. Gabriel is creating a line graph to show the population growth in London from 2015 to 2019.

The population in 2015 was 8,600,000 million. At its highest in 2019, it was 9,200,000 million. I will use intervals of 750,000 for the population axis.

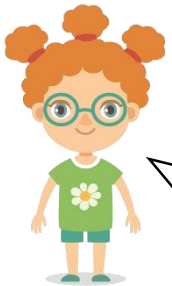
Will his line graph work? Draw a line graph to help you explain why.

GD

R

Draw Line Graphs

7b. Mary is creating a line graph to show the average speed of a car in a 10 minute period.



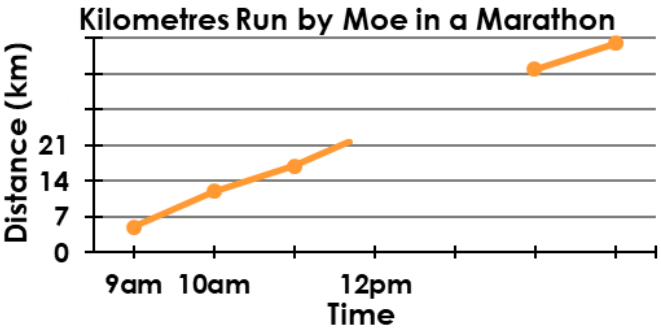
The average speed of the car was 23mph at 1 minute. It reached its maximum speed of 59mph at 10 minutes. I will use intervals of 18mph for the speed axis.

Will her line graph work? Draw a line graph to help you explain why.

GD

R

8a. Part of this line graph is missing. It should show from 9am to 3pm.

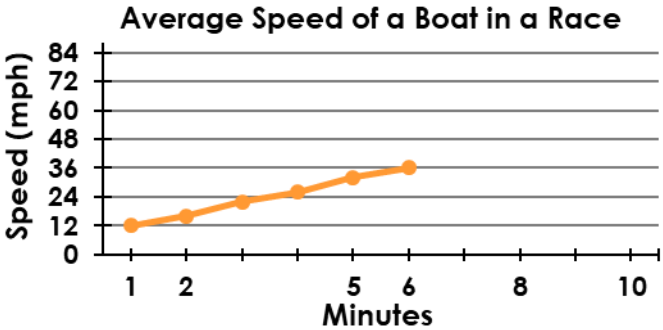


If the graph continues in the same way, when would Moe have run 29km? Draw the completed line graph.

GD

PS

8b. Part of this line graph is missing. It should show 10 minutes of the boat race.



If the graph continues in the same way, when will it reach an average speed of 46mph? Draw the completed line graph.

GD

PS

9a. Damon has created a line graph to show how many steps he took in a 5 hour period.

He says,

My line graph uses increments of 1,250 steps. The two titles I have used are 'Numbers of Steps' and 'Hour'. I walked a different distance between 950 and 1,200 steps every hour.

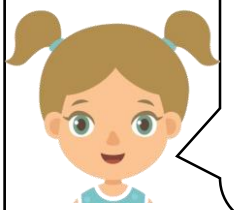
Use these pieces of information to draw a line graph.

GD

PS

9b. Pixie has created a line graph to show the number of kilometres she walked in 6 days.

She says,



My line graph uses increments of 4km. The two titles I have used are 'Distance (km)' and 'Day'. I walked 7km in total every 2 days. I walked a different distance each day.

Use these pieces of information to draw a line graph.

GD

PS

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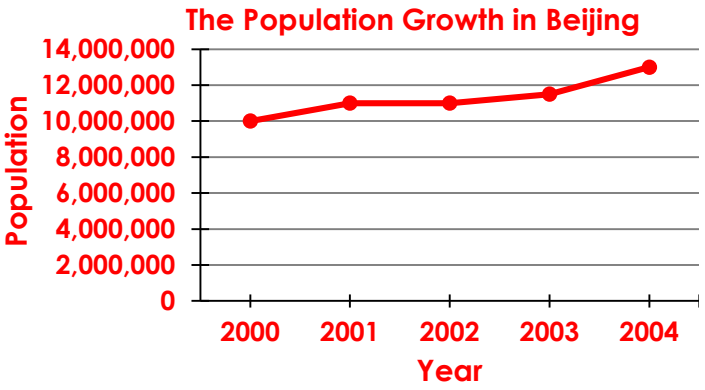
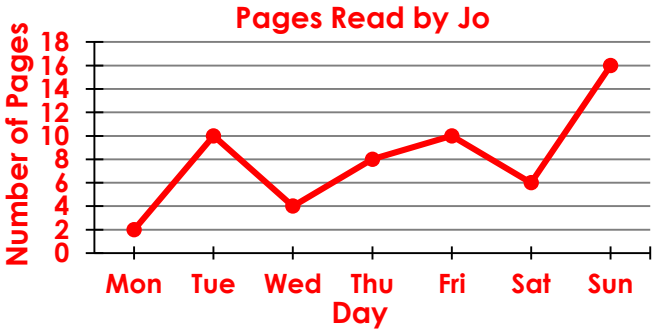
Reasoning and Problem Solving
Draw Line Graphs

Developing

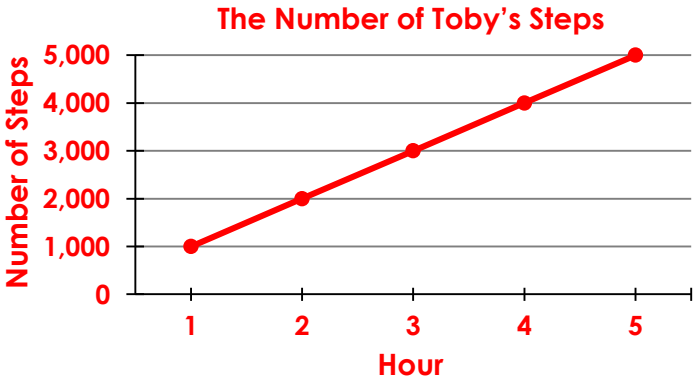
1a. Various answers, for example:
Roger's line graph could work (as shown below), however, he could have also used intervals of 1 million instead to create a more accurate line graph.



2a. Various answers, for example:
Jo could have read 16 pages on Sunday.



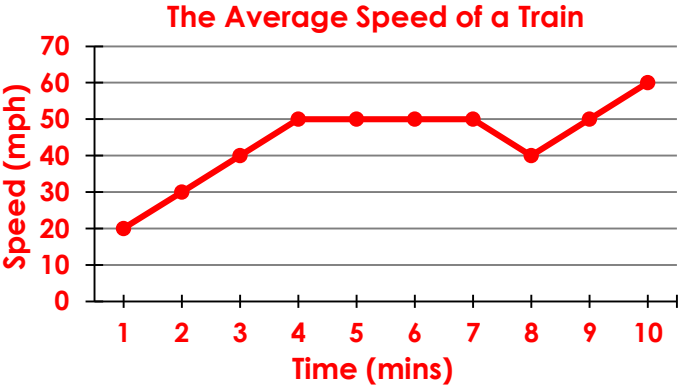
3a.



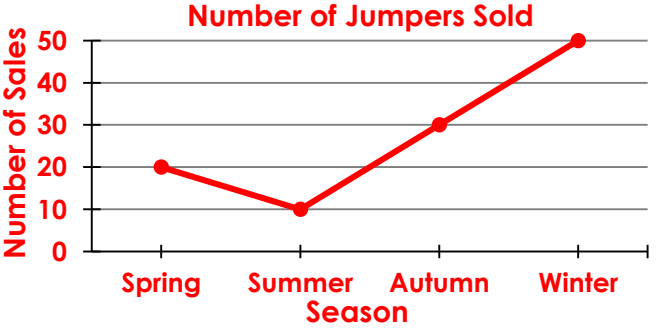
Reasoning and Problem Solving
Draw Line Graphs

Developing

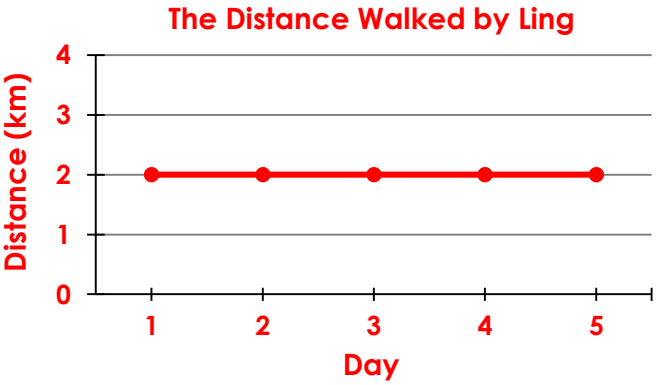
1b. Various answers, for example:
Aleia's line graph will work (as shown below) because the intervals she has chosen allow her to clearly see the average speed of the train.



2b. Various answers, for example:
10 sales could have been made in summer.



3b.



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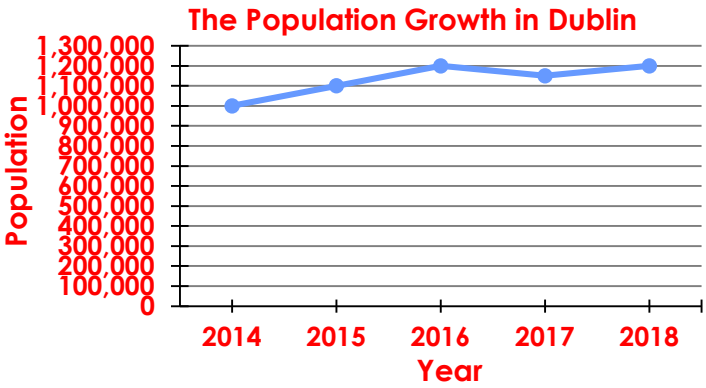
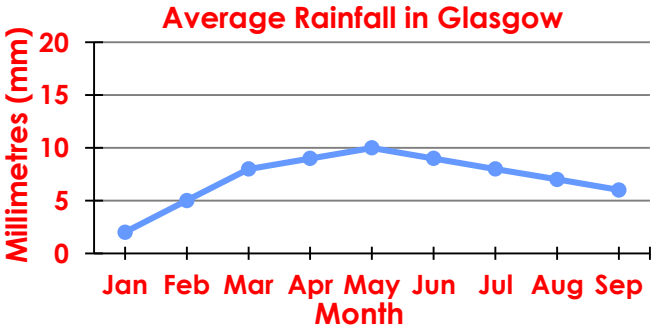
Reasoning and Problem Solving
Draw Line Graphs

Expected

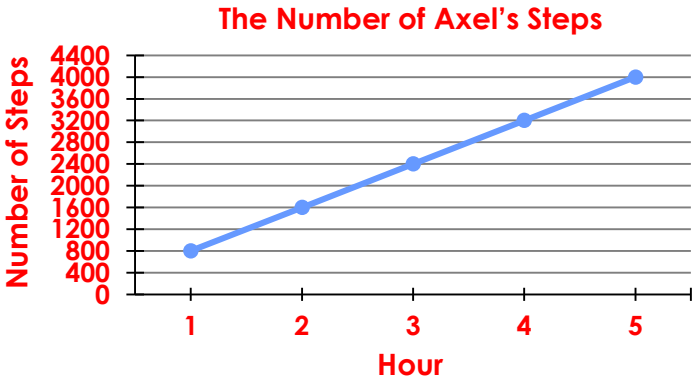
4a. Various answers, for example: Sammy's line graph could work (as shown below), however, he could have also used intervals of 50,000 instead to create a more accurate line graph.



5a. If it continues to decrease by 1mm, the average rainfall in August will be 7 millimetres.



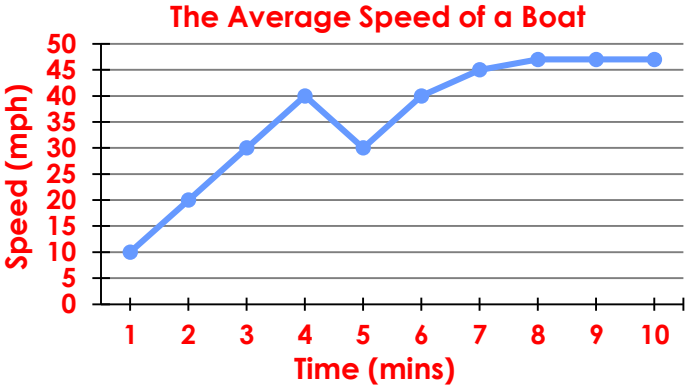
6a. Various answers, for example:



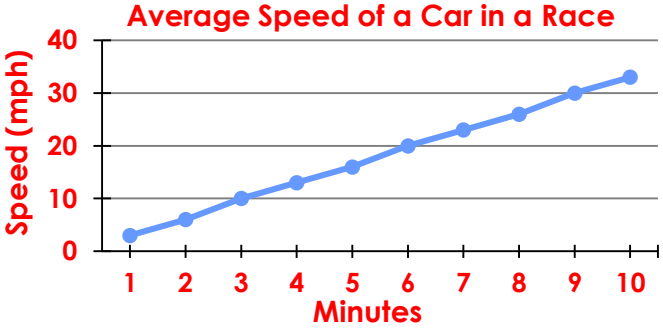
Reasoning and Problem Solving
Draw Line Graphs

Expected

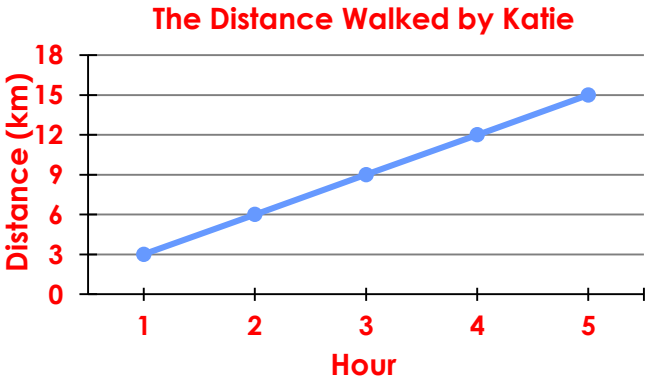
4b. Various answers, for example: Deanna's line graph could work, however, it will be difficult to read the speeds accurately. Intervals of 10mph (as shown below) would be more suitable.



5b. If the line graph continues in the same way, the car will reach an average speed of 30mph at 9 minutes.



6b. Various answers, for example:



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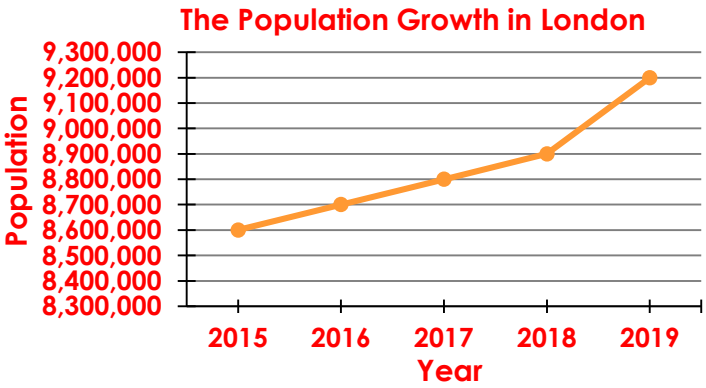
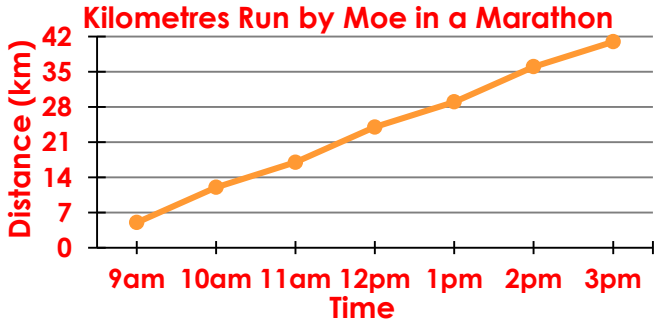
Reasoning and Problem Solving
Draw Line Graphs

Greater Depth

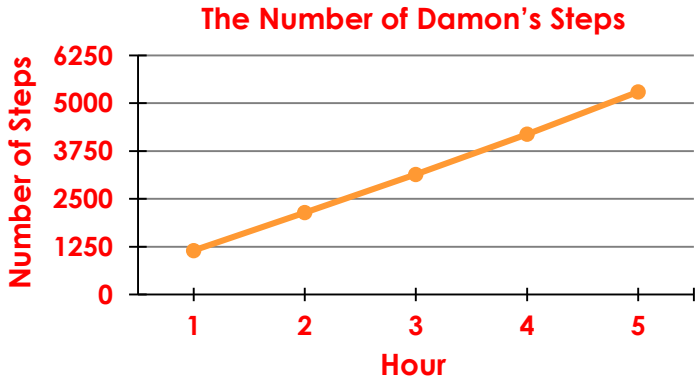
7a. Various answers, for example:
Gabriel's line graph could work, however, he could have also used intervals of 100,000 instead (as shown below) to create a more accurate line graph.



8a. If the line graph continues in the same way, Moe would have run 29km at 1pm.



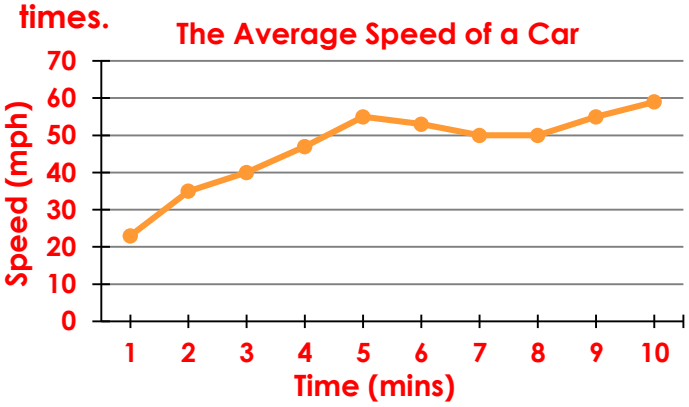
9a. Various answers, for example:



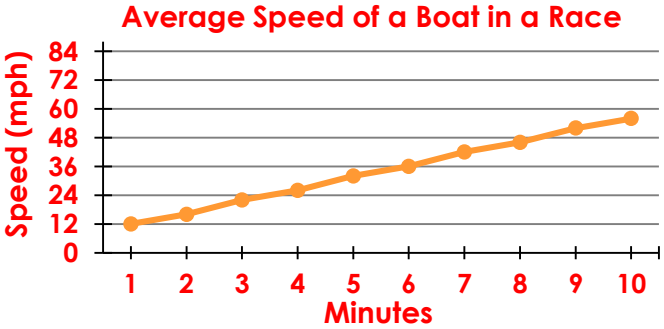
Reasoning and Problem Solving
Draw Line Graphs

Greater Depth

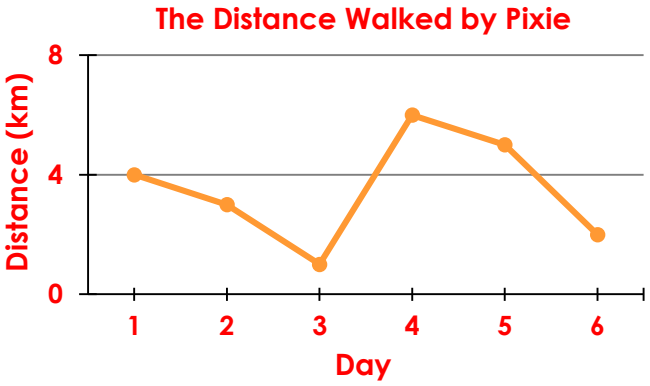
7b. Various answers, for example:
Mary's line graph could work, however, if she used intervals of 10mph instead (as shown below), it will make it easier to read the average speed of the car at different times.



8b. If the line graph continues in the same way, the boat will reach an average speed of 46mph at 8 minutes.



9b. Various answers, for example:



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