

Statistics: Birthday Bar Charts

Aim: Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. I can interpret and present discrete data in bar charts.	Success Criteria: I can answer questions about data presented in bar charts. I can present data in different types of bar chart. I can compare different types of bar chart.	Resources: Lesson Pack
	Key/New Words: Bar chart, grouped bar chart, stacked bar chart, table, data, axis, discrete data.	Preparation: Differentiated Birthday Bar Charts Activity Sheets - 1 per child Find My Match Birthday Bar Chart Cards - 1 per class

Prior Learning: It will be helpful if children have experience of interpreting and presenting data in bar charts.

Learning Sequence

	Park Ages Spot the Difference: Shown on the Lesson Presentation are a table and a bar chart which are intended to represent the same data. However, five mistakes have been made. The children identify the differences and explain their reasoning.	
	Birthday Maths: Discuss the table of data shown on the Lesson Presentation which shows how many of Class 4's birthdays there are in each month. Then follow the step-by-step instructions and animated diagrams on the Lesson Presentation which model how to draw a bar chart using the table of data. Key features to discuss include the gap between the bars, the choice of scale based on the range of the data and the importance of a clear title and data labels.	
	Grouped Birthday Bar Chart: Discuss the changes that have been made to the table of data shown on the Lesson Presentation , focusing on the subcategories of data to show how many of the birthdays each month are boys or girls. Discuss how the inclusion of these subcategories changes the way the data is presented in a bar chart. Follow the step-by-step instructions and animated diagrams on the Lesson Presentation to model how to draw a grouped bar chart using the table of data. Key features to discuss include the use of multiple bars for each month and the use of a key/legend to identify the subcategories of data. Discuss the purpose of a grouped bar chart for comparing data within a category and then use the grouped bar chart to answer the given questions.	
	Stacked Birthday Bar Chart: Use the images and information on the Lesson Presentation to explain that the data from the second table can also be displayed as a stacked bar chart, which is a useful way of comparing the data in the subcategories, while still being able to quickly see the total for each main category. Use the stacked bar chart to answer questions about the birthdays in Class 4.	
	Birthday Bar Charts: Children complete the differentiated Birthday Bar Charts Activity Sheets , to show they can interpret and present discrete data in a bar chart . The children can use the fictional data included or if appropriate, the class can survey how many of their birthdays there are in each month and use that data.	
	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Draw a bar chart to present the table of data and answer questions about the data.</p> </div> <div style="text-align: center;"> <p>Draw a grouped bar chart to present the table of data and answer questions about the data.</p> </div> <div style="text-align: center;"> <p>Draw a stacked bar chart to present the table of data and answer questions about the data.</p> </div> </div>	
	Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.	
	<div style="display: flex;"> <div style="margin-right: 10px;"></div> <p>Children interpret a bar chart and table to fill in missing data.</p> </div>	
	<div style="display: flex;"> <div style="margin-right: 10px;"></div> <p>Children explain the best method for presenting data then demonstrate this themselves.</p> </div>	
	<div style="display: flex;"> <div style="margin-right: 10px;"></div> <p>Children identify and improve problems in a pictogram and answer and write questions about a given bar chart.</p> </div>	



Find My Match: Hand out the shuffled [Find My Match Birthday Bar Chart Cards](#), one to each child. Each card displays either a question or answer that corresponds to the stacked bar chart shown on the [Lesson Presentation](#). The children have three minutes to quietly move around the classroom to find their matching card.



Masterit

Extendit: Children could survey the birthday months of another class to present as bar charts and then compare the data with that of their own class.

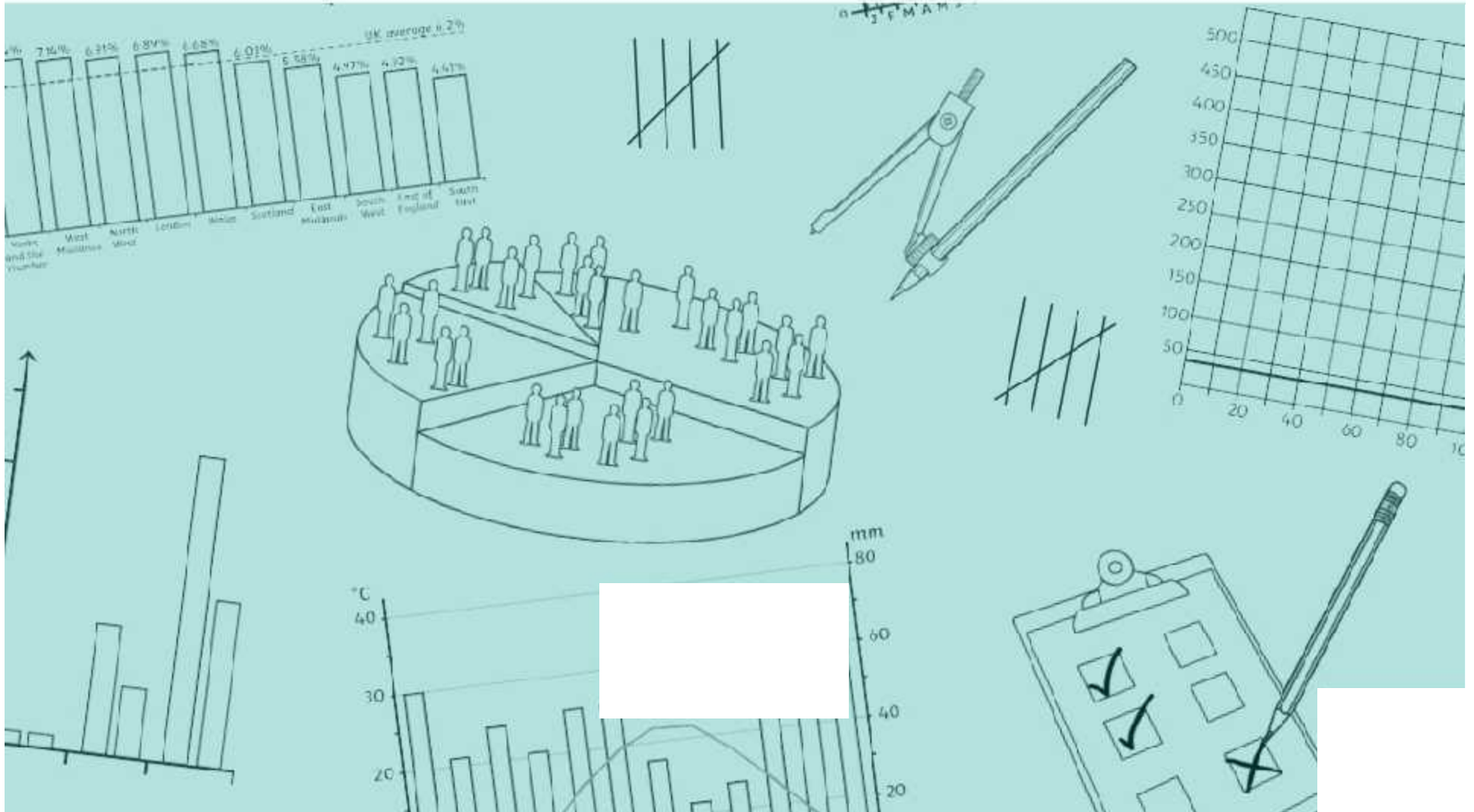
Challengeit: Challenge children to make their own grouped or stacked bar charts following their own line of enquiry, where each main category can be sub-divided into boy/girl comparison.



Maths

Statistics

Birthday Bar Charts



Aim

- I can interpret and present discrete data in a bar chart.

Success Criteria

- I can answer questions about data presented in bar charts.
- I can present data in different types of bar chart.
- I can compare different types of bar chart.

Park Ages Spot the Difference



Maya collected data about the ages of her friends who were playing in the park after school yesterday.

The Ages of Children Playing in the Park after School

Age in Years	Number of Children
4 or younger	6
5	11
6	9
7	12
8	
9 or older	

A Pictogram to Show the Ages of the Children Playing in the Park after School




Mr Jones was very impressed, but he spotted five mistakes in the bar chart. Can you spot them too?

Birthday Maths



In their maths lesson, the children in Class 4 are creating bar charts to show how many of their birthdays are in each month.

Month	Number of Birthdays
January	2
February	4
March	1
April	5
May	3
June	6
July	5
August	2
September	7
October	5
November	3
December	4

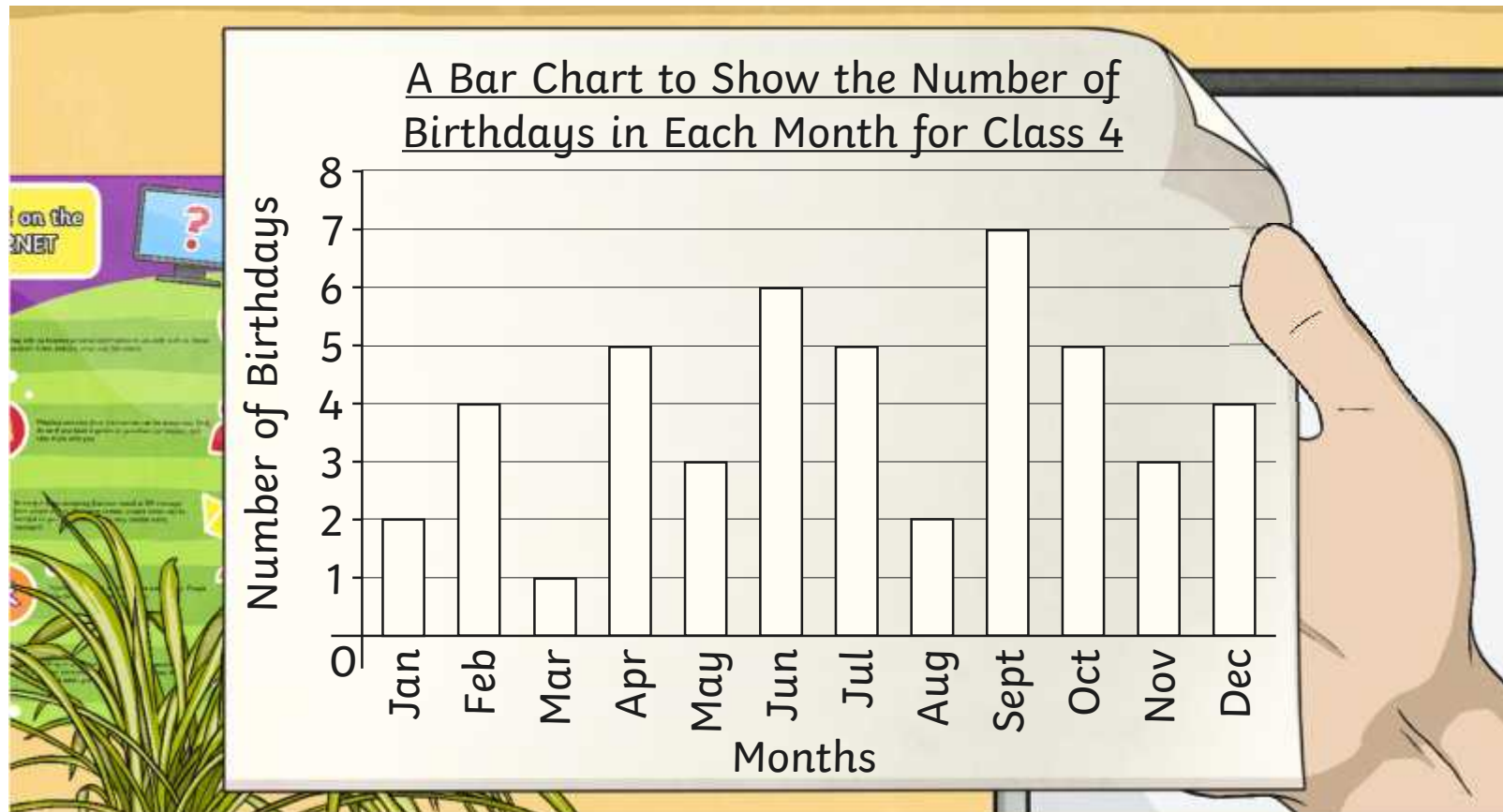


Here, it is only possible to count the number of birthdays in each month in whole numbers; it is not possible to count half a birthday!

Birthday Maths



A bar chart is a graph that shows the number of items in each category. The categories are written on the x-axis and the number of items is written on the y-axis. Each bar represents a category and its height shows the number of items in that category.



Grouped Birthday Bar Chart



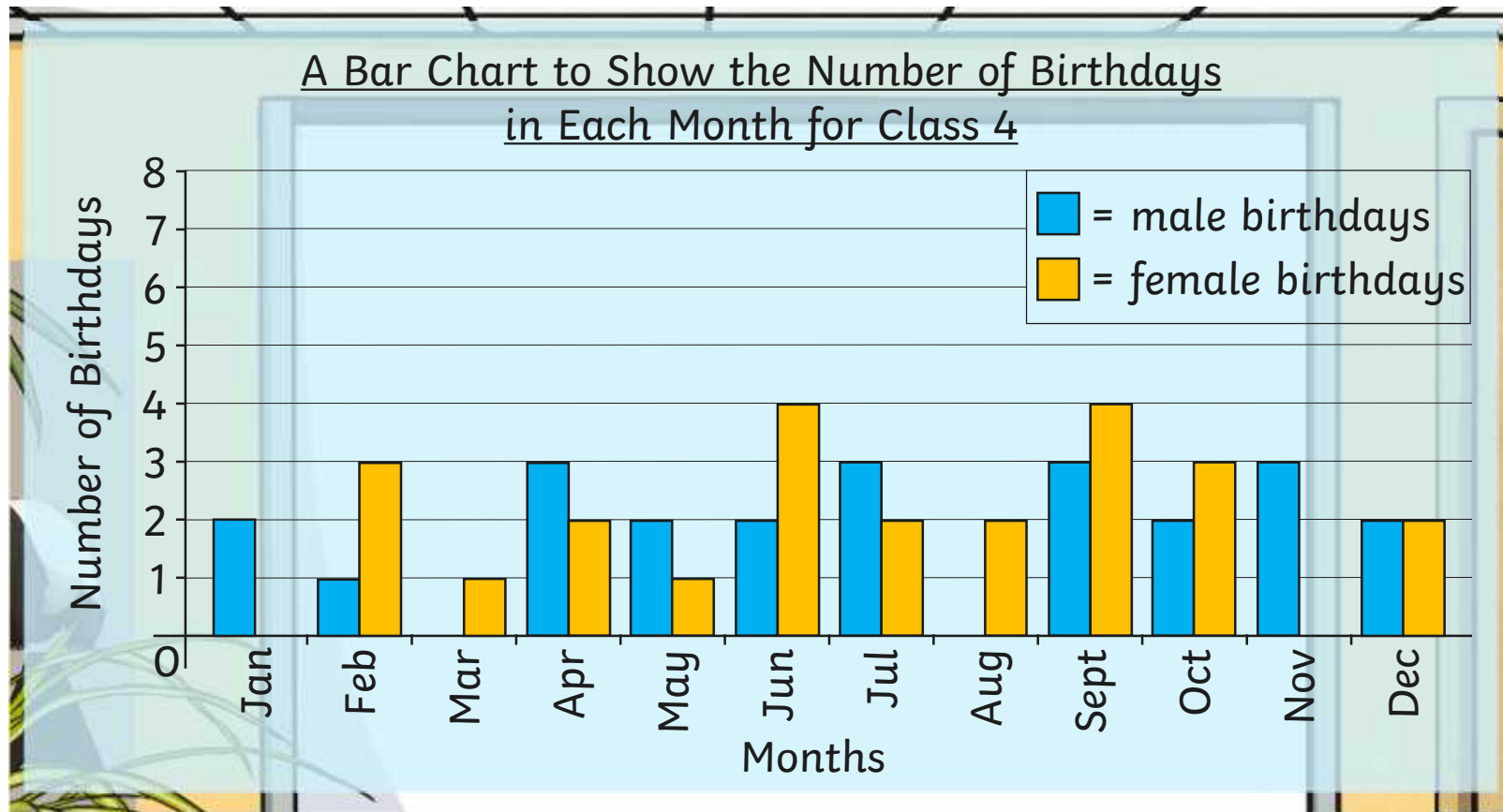
The number of birthdays is split into groups of subcategories; A key or legend is used to identify the subcategories of data. In a grouped bar chart, the categories go side-by-side for each bar!

Month	Number of Male Birthdays	Number of Female Birthdays
January	2	0
February	1	3
March	0	1
April	3	2
May	2	1
June	2	4
July	3	2
August	0	2
September	3	4
October	2	3
November	3	0
December	2	2

Grouped Birthday Bar Chart



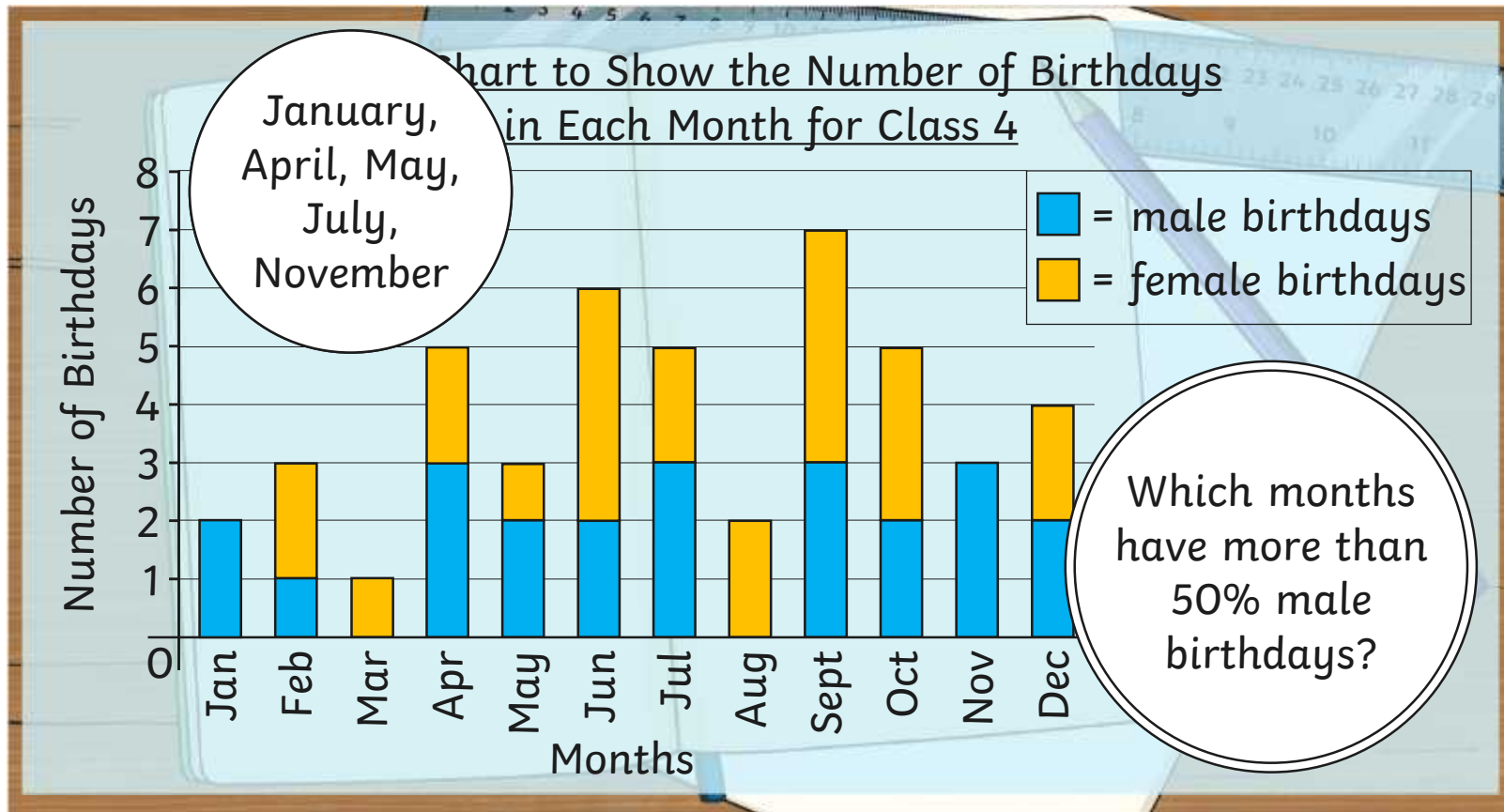
Just like the first bar chart, a grouped bar chart has a horizontal and vertical axis which is marked with the categories and the number scale.



Grouped Birthday Bar Chart



A stacked bar chart is a bar chart where each bar is divided into two or more parts, representing different categories within a main category. This allows you to see the total for each main category, while still being able to quickly see the total for each main category.



Birthday Bar Charts



Use your marvellous maths skills to complete these activities:

★ ★ ★

Here is a table of data:

Month
Number of Male Birthdays
Number of Female Birthdays

Draw a stacked bar chart to show the data.

A bar chart to show

★ ★

Here is a table of data:

Month
Number of Male Birthdays
Number of Female Birthdays

Draw a grouped bar chart to show the data.

A bar chart to show

★

Birthday Bar Charts

I can interpret and present discrete data in bar charts.

Here is a table of data that shows how many of Year 4's birthdays there are in each month.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Number of Birthdays	12	5	8	11	6	7	10	3	14	13	9	6

Draw a bar chart to show the data:

A bar chart to show

- 1) What type of data is the number of birthdays?

- 2) How many more birthdays does September have than February?

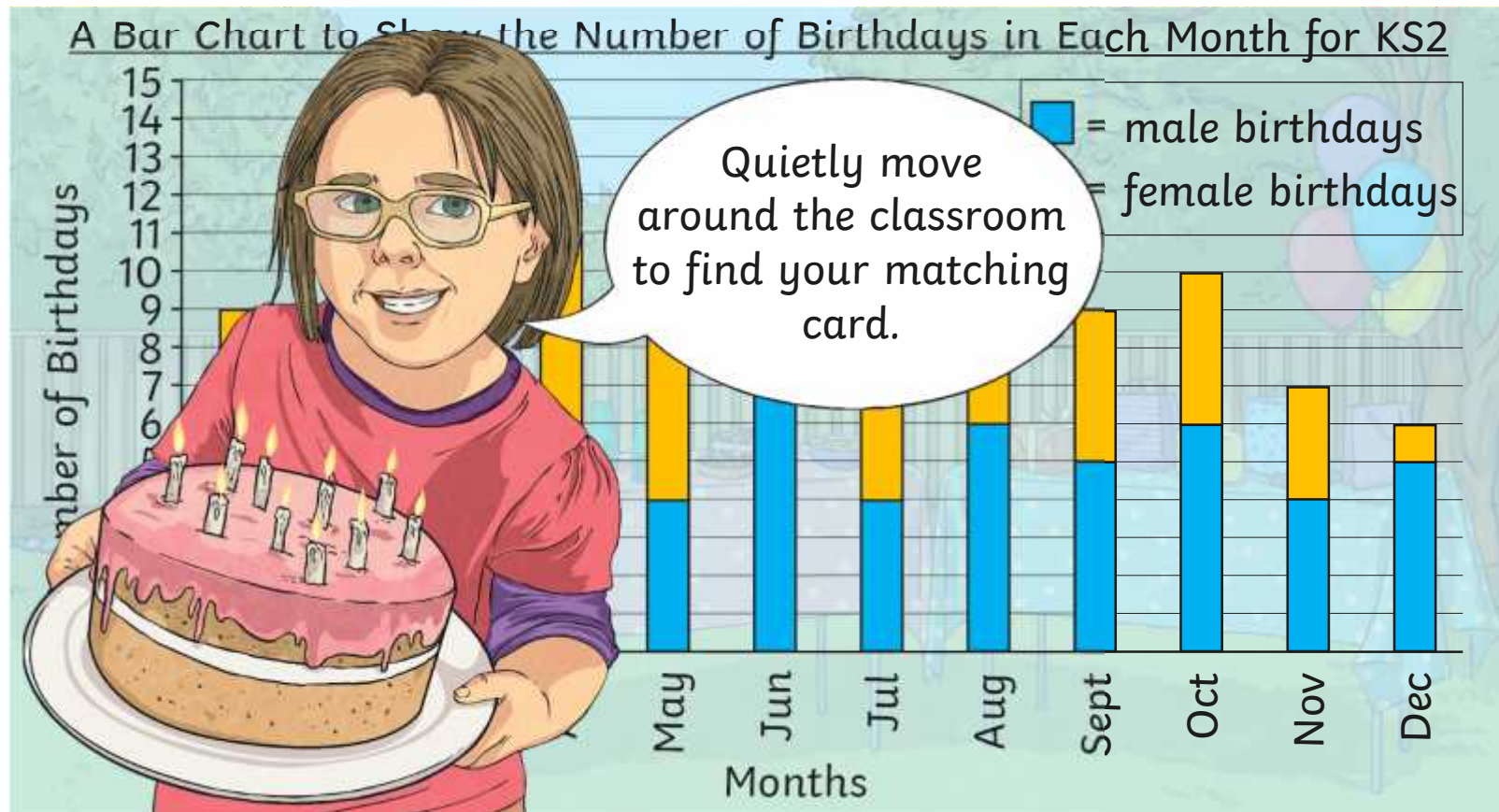
- 3) How many birthdays are in spring (March - May)?

- 4) How many birthdays are in autumn (September - November)?

Find My Match



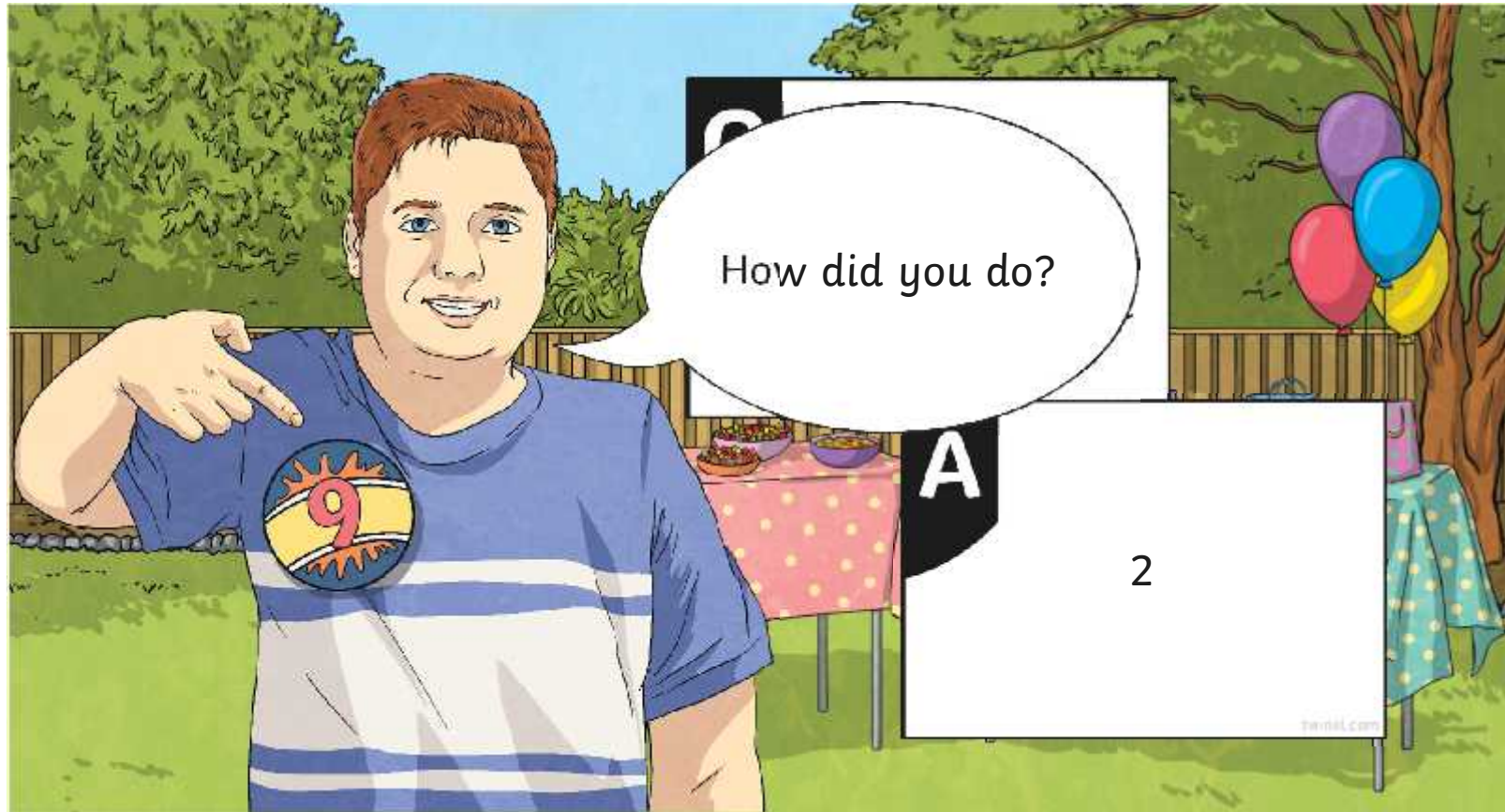
Hand out the shuffled question and answer cards for this bar chart.



Find My Match



Compare your question and answer cards below.
Did you match your cards correctly?



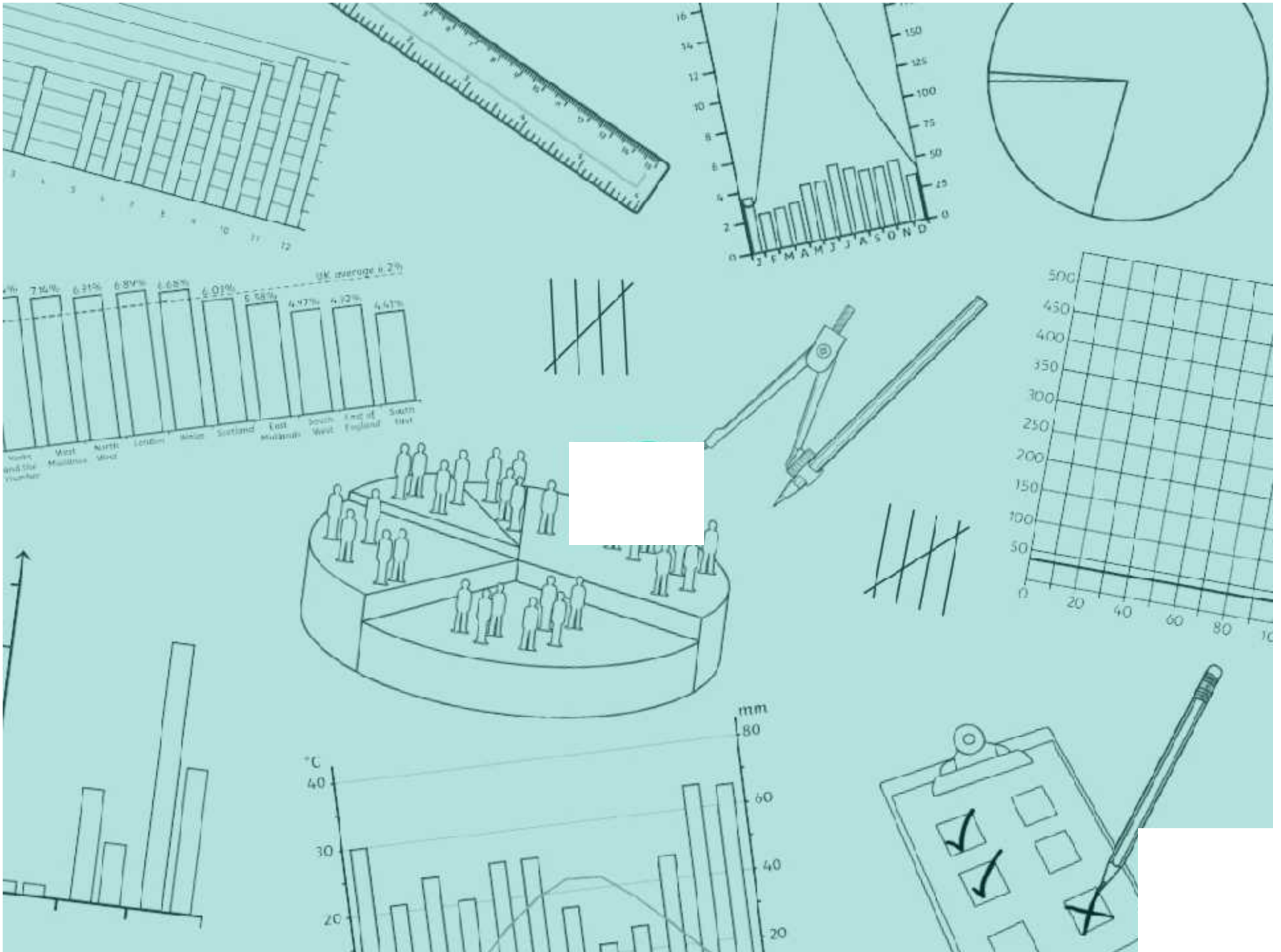
Aim



- I can interpret and present discrete data in a bar chart.

Success Criteria

- I can answer questions about data presented in bar charts.
- I can present data in different types of bar chart.
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Birthday Bar Charts

I can interpret and present discrete data in bar charts.

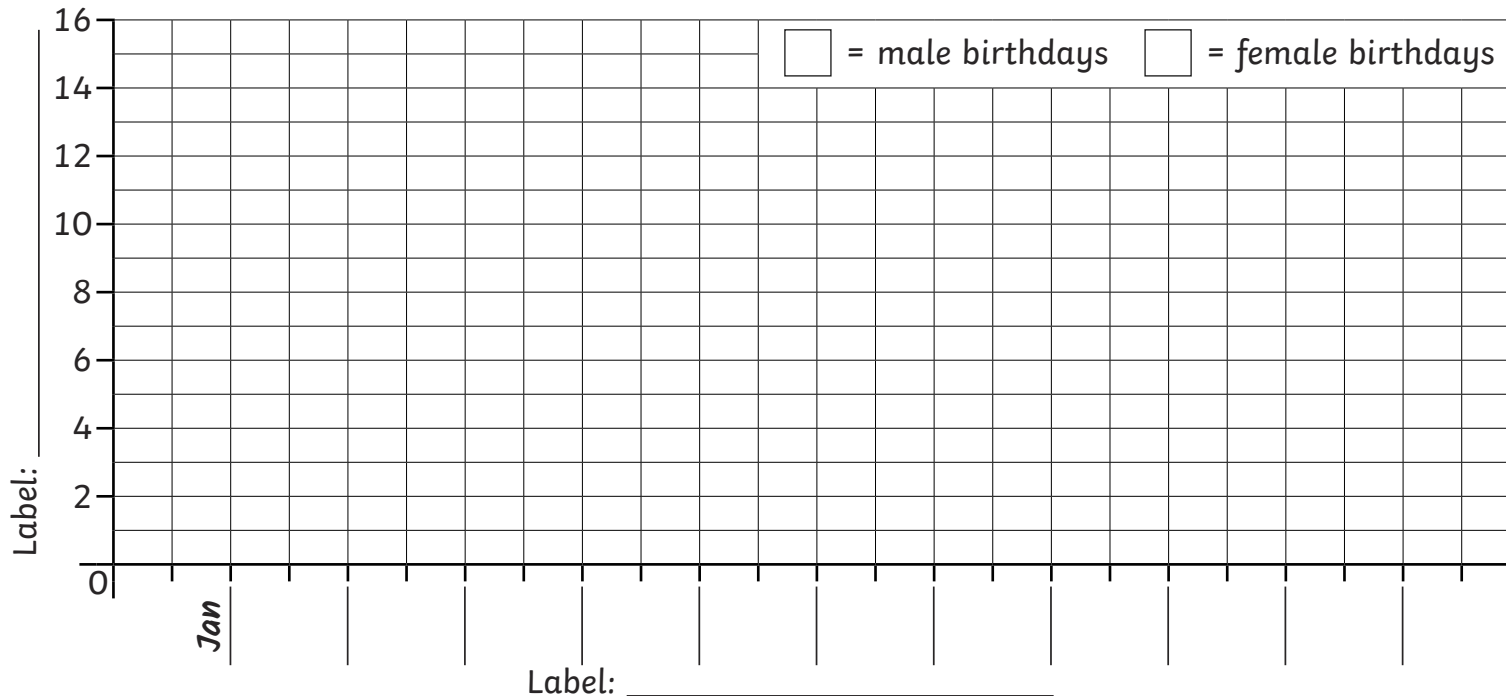


Here is a table of data that shows how many of Year 4's birthdays there are in each month.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Number of Male Birthdays	5	3	3	6	2	2	6	1	9	5	5	4
Number of Female Birthdays	7	2	5	5	4	5	4	2	5	8	4	2

Draw a stacked bar chart to show the data:

A bar chart to show _____



- 1) What type of data is the number of birthdays?

- 2) How many more male birthdays does September have than January?

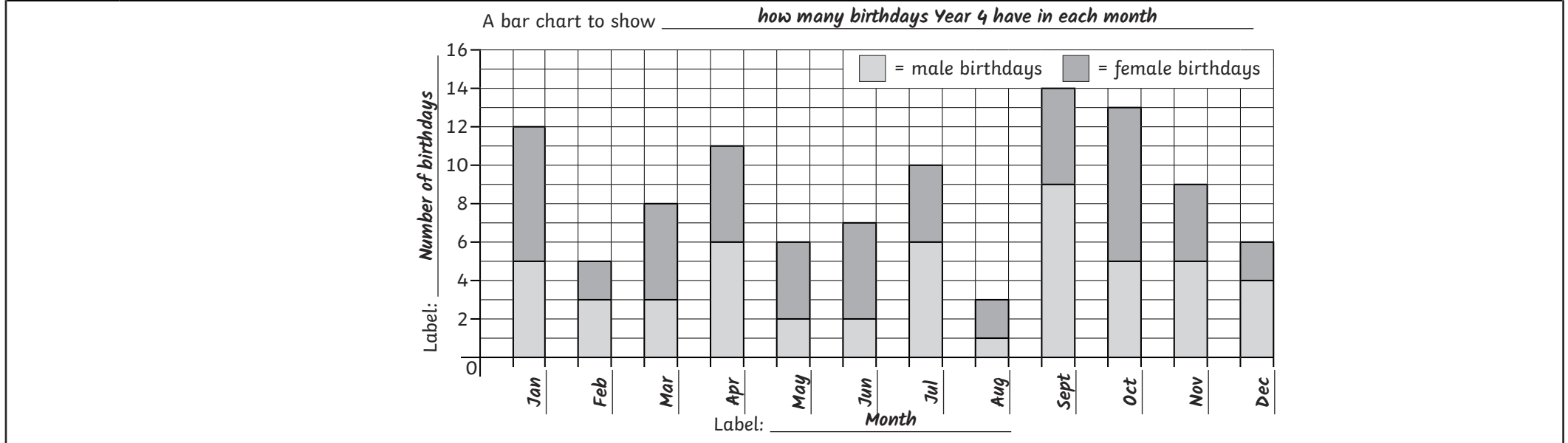
- 3) How many female birthdays are in winter (December - February)?

- 4) What is the difference between male and female birthdays in summer (June - August)?



Birthday Bar Charts Answers

Question	Answer
	Draw a bar chart to show the data:



1. What type of data is the number of birthdays?	
	<i>Discrete</i>
2. How many more male birthdays does September have than January?	
	4

3. How many female birthdays are in winter (December - February)?	
	11
4. What is the difference between male and female birthdays in summer (June - August)?	
	2



Birthday Bar Charts

I can interpret and present discrete data in bar charts.

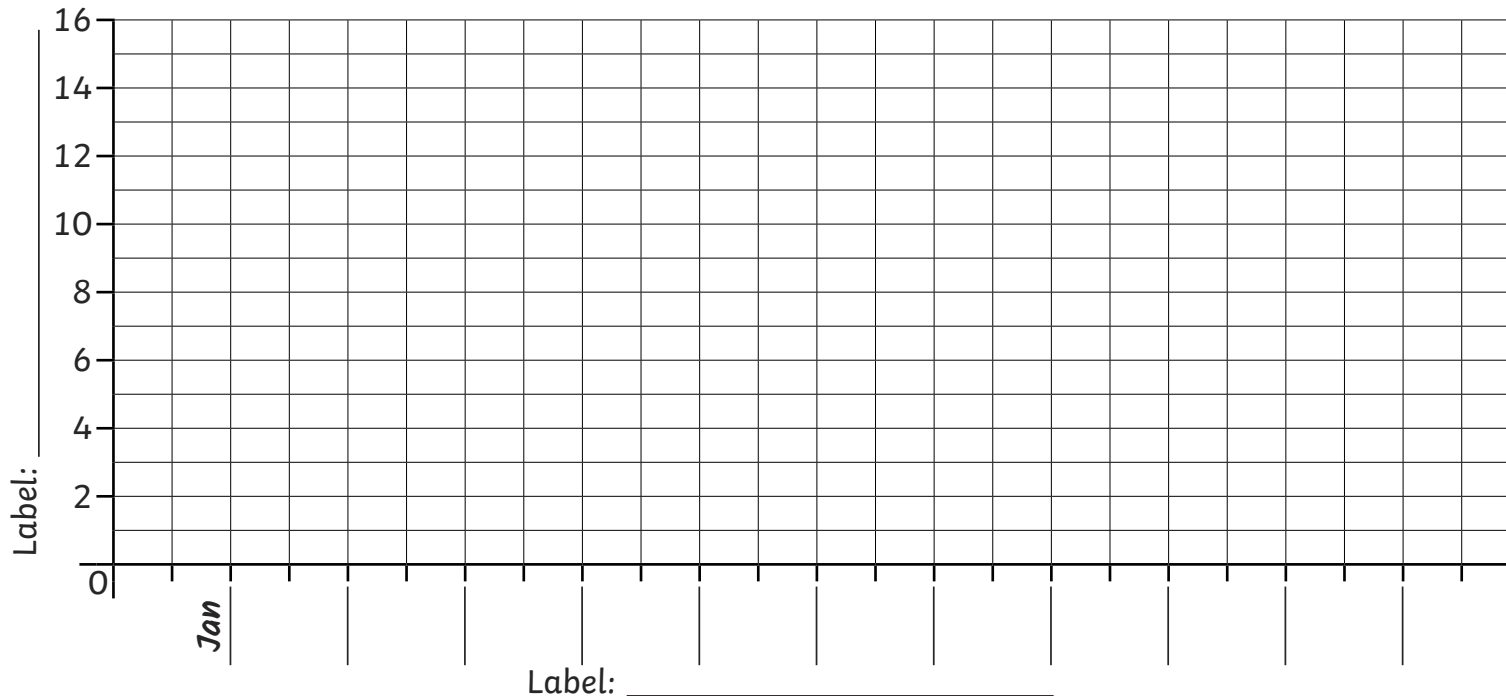


Here is a table of data that shows how many of Year 4's birthdays there are in each month.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Number of Birthdays	12	5	8	11	6	7	10	3	14	13	9	6

Draw a bar chart to show the data:

A bar chart to show _____



- 1) What type of data is the number of birthdays?

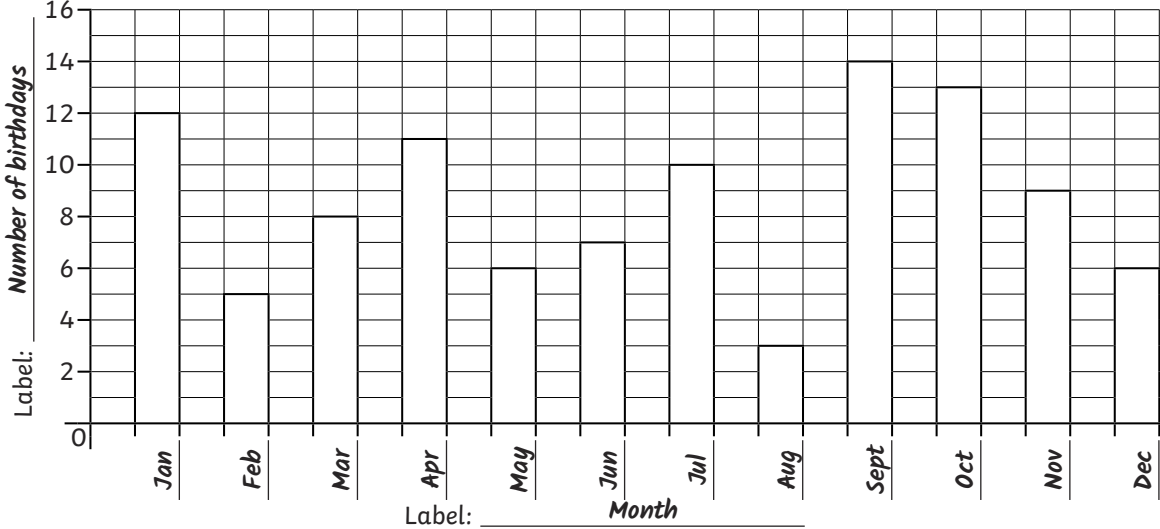
- 2) How many more birthdays does September have than February?

- 3) How many birthdays are in spring (March - May)?

- 4) How many birthdays are in autumn (September - November)?



Birthday Bar Charts Answers

Question	Answer																										
	Draw a bar chart to show the data:																										
<p>A bar chart to show <u>how many birthdays Year 4 have in each month</u></p>  <table border="1"><caption>Data for Birthday Bar Chart</caption><thead><tr><th>Month</th><th>Number of Birthdays</th></tr></thead><tbody><tr><td>Jan</td><td>12</td></tr><tr><td>Feb</td><td>5</td></tr><tr><td>Mar</td><td>8</td></tr><tr><td>Apr</td><td>11</td></tr><tr><td>May</td><td>6</td></tr><tr><td>Jun</td><td>7</td></tr><tr><td>Jul</td><td>10</td></tr><tr><td>Aug</td><td>3</td></tr><tr><td>Sept</td><td>14</td></tr><tr><td>Oct</td><td>13</td></tr><tr><td>Nov</td><td>9</td></tr><tr><td>Dec</td><td>6</td></tr></tbody></table>		Month	Number of Birthdays	Jan	12	Feb	5	Mar	8	Apr	11	May	6	Jun	7	Jul	10	Aug	3	Sept	14	Oct	13	Nov	9	Dec	6
Month	Number of Birthdays																										
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Nov	9																										
Dec	6																										
1. What type of data is the number of birthdays?	3. How many birthdays are in spring (March - May)?																										
Discrete	25																										
2. How many more birthdays does September have than February?	4. How many birthdays are in autumn (September - November)?																										
9	36																										



Birthday Bar Charts

I can interpret and present discrete data in bar charts.

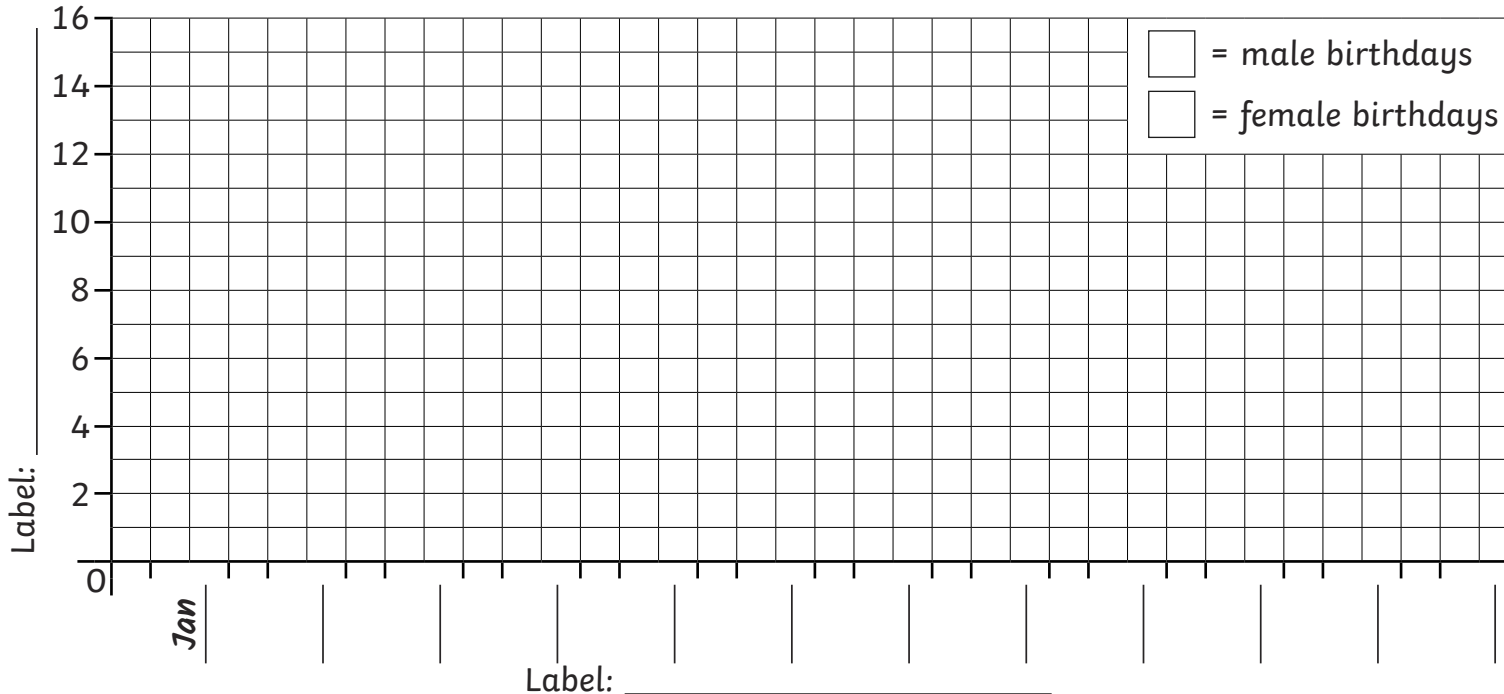


Here is a table of data that shows how many of Year 4's birthdays there are in each month.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Number of Male Birthdays	5	3	3	6	2	2	6	1	9	5	5	4
Number of Female Birthdays	7	2	5	5	4	5	4	2	5	8	4	2

Draw a grouped bar chart to show the data:

A bar chart to show _____



- 1) What type of data is the number of birthdays?

- 2) How many more male birthdays does September have than February?

- 3) How many female birthdays are in spring (March - May)?

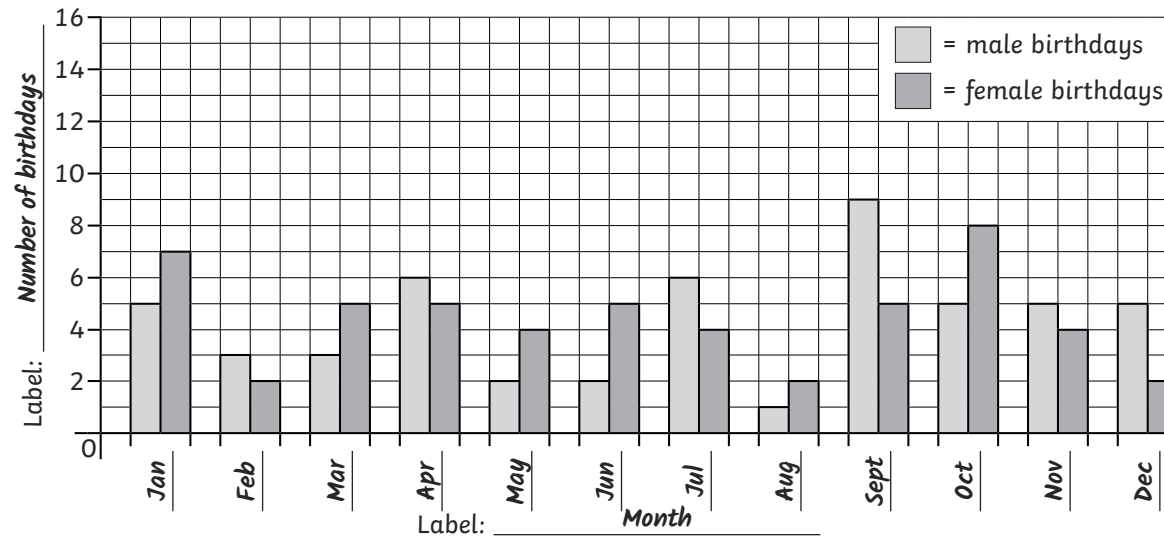
- 4) What is the difference between male and female birthdays in autumn (September - November)?



Birthday Bar Charts Answers

Question	Answer
	Draw a bar chart to show the data:

A bar chart to show how many birthdays Year 4 have in each month



1. What type of data is the number of birthdays?

Discrete

2. How many more male birthdays does September have than February?

6

3. How many female birthdays are in spring (March - May)?

14

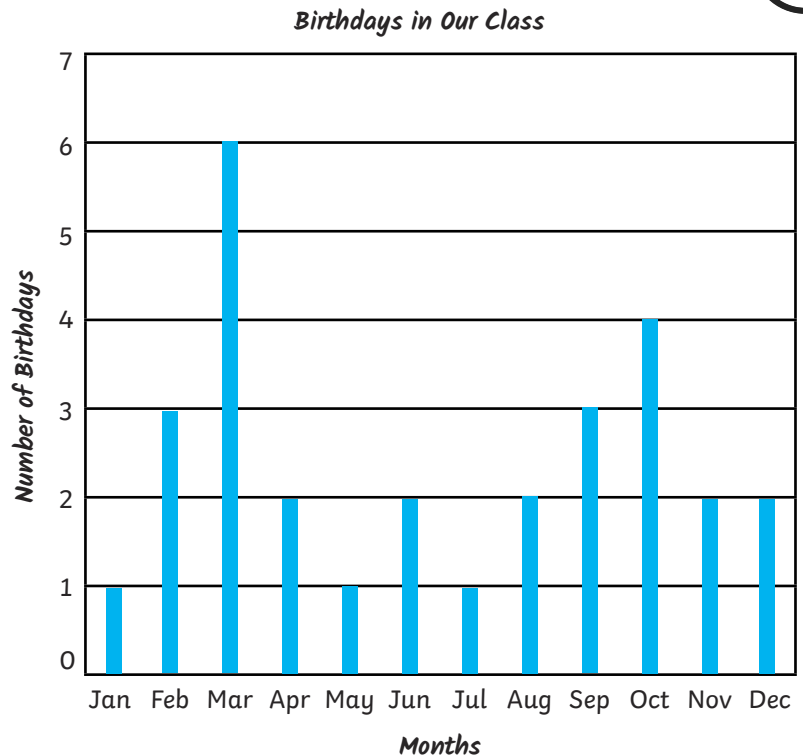
4. What is the difference between male and female birthdays in autumn (September - November)?

2



- 1) Here is a table and a bar chart showing the number of birthdays in each month of the year in a class of 29 children. Some results are missing. Fill in or draw on the missing results and label the axes.

Month	Number of Children
January	1
February	3
March	6
April	2
May	1
June	2
July	1
August	2
September	3
October	4
November	2
December	2
Total	29



- 1) Amir wants to present the birthdays of everyone in his school. Should he use a table, bar chart or pictogram to record this information? Explain why.



*Answers may vary but explanations could include:
Pictograms may be unclear with higher numbers.
A bar chart as lots of information can be recorded.*

- 2) On squared paper, record the birthdays in Amir's school using your chosen method. Remember you will need to show boys and girls on the chart together.
Children should demonstrate separate coloured bars or pictorial representations for boys and girls.

- 1) Carla has drawn this pictogram to show the days of the week when children in her school had birthday parties. How could she improve her pictogram?



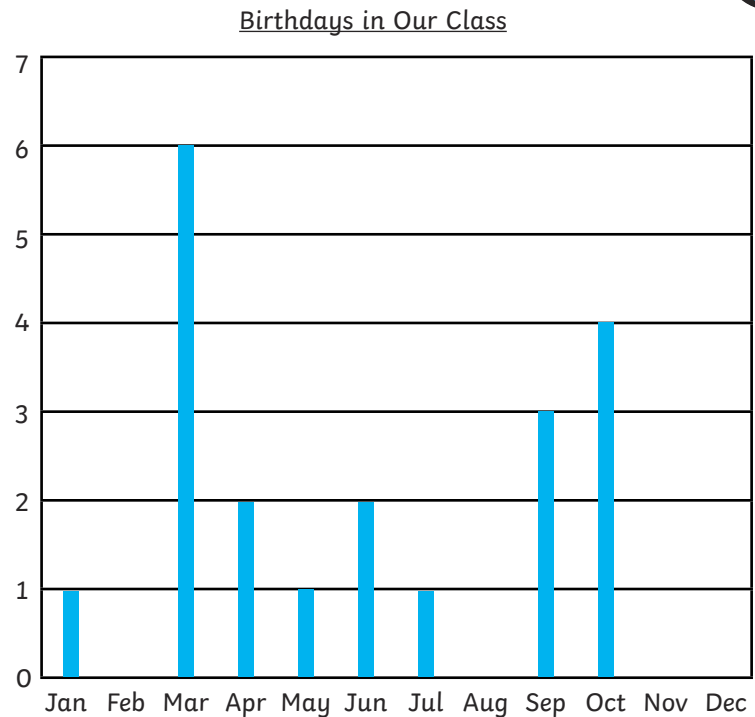
Answers could include: clearer headings; a title; much clearer pictures; a key showing how many children each picture represents.

- 2) This graph shows the number of children in year 5 and 6 who had a cake for their birthday.
- How many children are there in year 5? **29**
 - How many children did not have a birthday cake? **20**
 - How many more children had a cake than didn't? **19**
 - Write two of your own questions that can be answered using this bar chart: **Multiple answers possible.**
 - Write a question, about the children's birthday cakes in year 5 and 6, that you could not answer just from looking at this bar chart. **Multiple answers possible.**

- 1) Here is a table and a bar chart showing the number of birthdays in each month of the year in a class of 29 children. Some results are missing. Fill in or draw on the missing results and label the axes.



Month	Number of Children
January	
February	3
March	6
April	
May	1
June	2
July	1
August	
September	
October	
November	2
December	2
Total	29



- 1) Amir wants to present the birthdays of everyone in his school. Should he use a bar chart or pictogram to record this information?







Explain why:

Month	Number of Girls	Number of Boys
January	16	18
February	11	8
March	19	6
April	21	17
May	19	23
June	17	23
July	16	15
August	14	24
September	20	19
October	22	23
November	10	18
December	17	20

- 2) On squared paper, record the birthdays in Amir's school using your chosen method. Remember you will need to show boys and girls on the chart together.



- 1) Carla has drawn this pictogram to show the days of the week when children in her school had birthday parties.
How could she improve her pictogram?

Day of Celebration	Children
Monday-Thursday	
Friday	
Saturday	
Sunday	

- 2) This graph shows the number of children in year 5 and 6 who had a cake for their birthday.

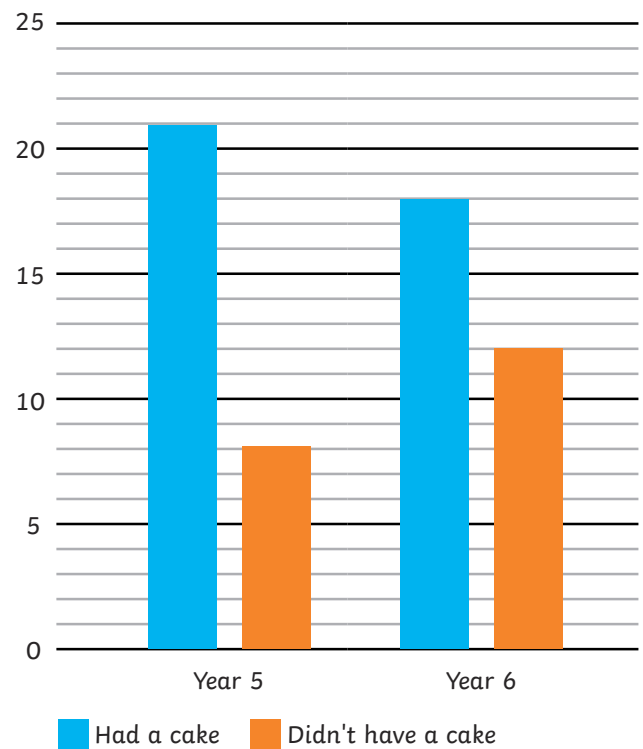
a) How many children are there in year 5?

b) How many children did not have a birthday cake?

c) How many more children had a cake than didn't?

d) Write two of your own questions that can be answered using this bar chart:

e) Write a question, about the children's birthday cakes in year 5 and 6, that you could not answer just from looking at this bar chart.

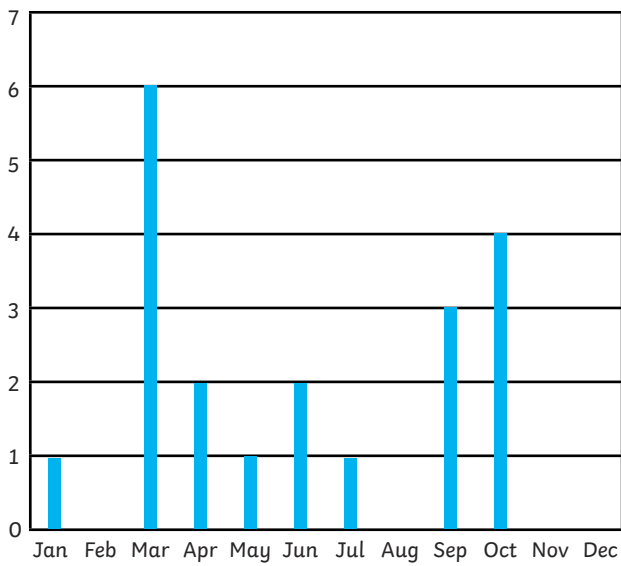


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Month	Number of Children
January	
February	3
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April	
May	1
June	2
July	1
August	
September	
October	
November	2
December	2
Total	29

Birthdays in Our Class

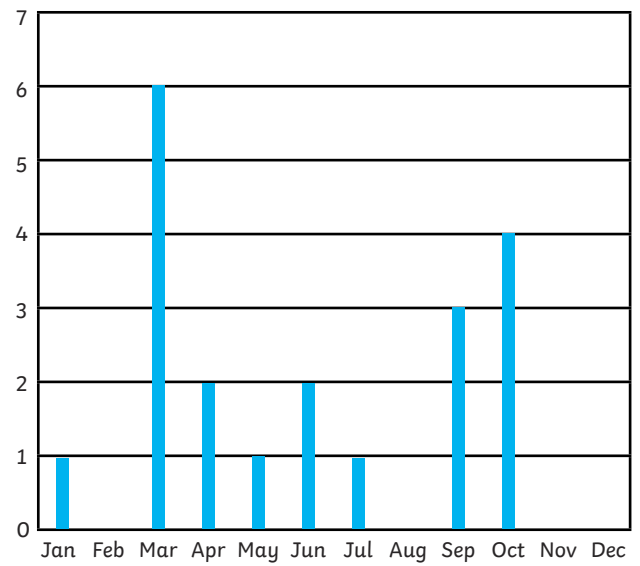


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Month	Number of Children
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April	
May	1
June	2
July	1
August	
September	
October	
November	2
December	2
Total	29

Birthdays in Our Class



- 1) Amir wants to present the birthdays of everyone in his school. Should he use a bar chart or pictogram to record this information? Explain why in your book.



Month	Number of Girls	Number of Boys
January	16	18
February	11	8
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April	21	17
May	19	23
June	17	23
July	16	15
August	14	24
September	20	19
October	22	23
November	10	18
December	17	20

- 2) In your book or on squared paper, record the birthdays in Amir's school using your chosen method. Remember you will need to show boys and girls on the chart together.

- 1) Amir wants to present the birthdays of everyone in his school. Should he use a bar chart or pictogram to record this information? Explain why in your book.



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June	17	23
July	16	15
August	14	24
September	20	19
October	22	23
November	10	18
December	17	20

- 2) In your book or on squared paper, record the birthdays in Amir's school using your chosen method. Remember you will need to show

- 1) Carla has drawn this pictogram to show the days of the week when children in her school had birthday parties.

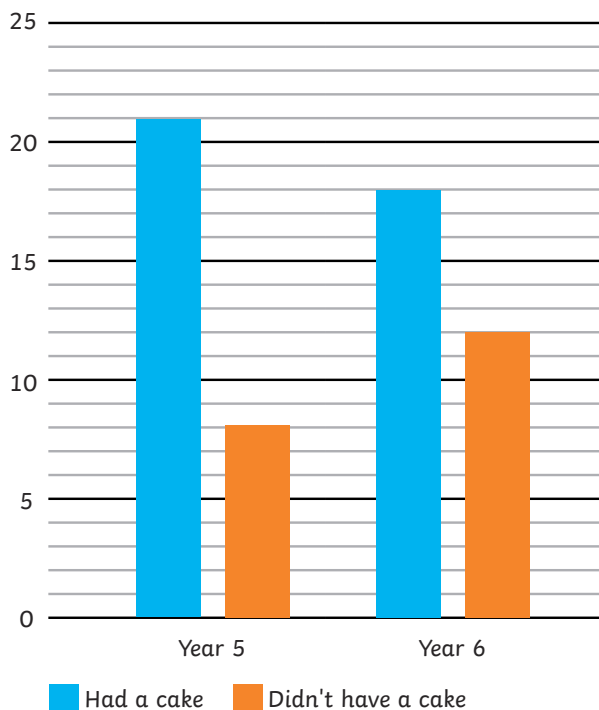


In your book, write how she could improve her pictogram.

Day of Celebration	Children
Monday-Thursday	
Friday	
Saturday	
Sunday	

- 2) This graph shows the number of children in year 5 and 6 who had a cake for their birthday. In your book, answer the following questions:

- How many children are there in year 5?
- How many children did not have a birthday cake?
- How many more children had a cake than didn't?
- Write two of your own questions that can be answered using this bar chart.
- Write a question, about the children's birthday cakes in year 5 and 6, that you could not answer just from looking at this bar chart.



- 1) Carla has drawn this pictogram to show the days of the week when children in her school had birthday parties.

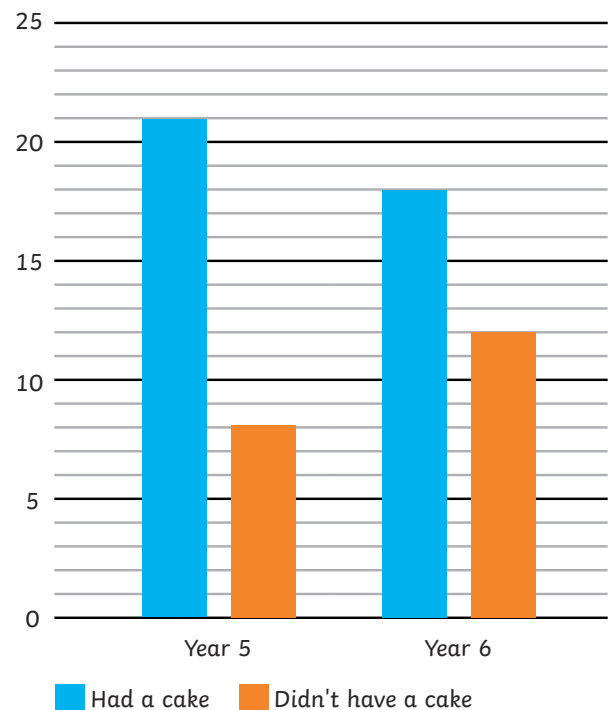


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- Write a question, about the children's birthday cakes in year 5 and 6, that you could not answer just from looking at this bar chart.



Q

Which two months have the most birthdays?

Q

Which two months have the fewest birthdays?

Q

Which month has the most boys' birthdays?

Q

Which month has the most girls' birthdays?

Q

Which month has the fewest boys' birthdays?

Q

Which month has the fewest girls' birthdays?

Q

How many birthdays are there altogether in spring (March - May)?

Q

How many birthdays are there altogether in summer (June - August)?

Q

How many birthdays are there altogether in autumn (September - November)?

Q

How many birthdays are there altogether in winter (December - February)?

Q

How many boys' birthdays are there altogether in spring (March - May)?

Q

How many girls' birthdays are there altogether in summer (June - August)?

Q

How many boys' birthdays are there altogether in autumn (September - November)?

Q

How many girls' birthdays are there altogether in winter (December - February)?

Q

How many more boys' birthdays are there in June than girls' birthdays?

Q

How many more girls' birthdays are there in August than boys' birthdays?

A

June and August

A

May and December

A

June

A

August

A

March

A

December

A

24

A

38

A

26

A

27

A

11

A

18

A

15

A

10

A

6

A

2

Statistics | Birthday Bar Charts

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I can answer questions about data presented in bar charts.		
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I can interpret and present discrete data in bar charts.		
I can answer questions about data presented in bar charts.		
I can present data in different types of bar chart.		
I can compare different types of bar chart.		