Statistics

Master The Curriculum

3

Fluency & Reasoning Teaching Slides

Pictograms

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Fluency & Reasoning Teaching Slides

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Activity 1 Pictograms

4 classes are recording how many books they read in a week. Here are the results of how many books they read last week.

Class	Books read
Class 1	
Class 2	
Class 3	
Class 4	

 = 5 books

What is each symbol worth?

Activity 1 Pictograms

Class	Books read
Class 1	
Class 2	
Class 3	
Class 4	

 = 5 books

Which class read the most books?

Which class read the least books?

How many more books did Class 4 read than Class 2?

Activity 1 Pictograms

Class	Books read
Class 1	
Class 2	
Class 3	
Class 4	

 = 5 books

Which class read the most books?

Class 4 read the most books.

Which class read the least books?

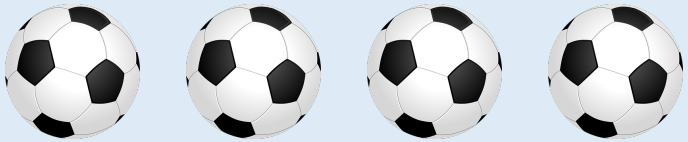
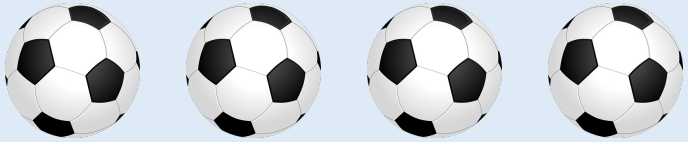
Class 2 read the least books.

How many more books did Class 4 read than Class 2?

Class 4 read 10 more books than Class 2.

Activity 1 Pictograms

The pictogram shows how many goals some football teams scored.

Teams	Goals
Team 1	
Team 2	
Team 3	
Team 4	

 = 5 goals

Activity 1 Pictograms

Teams	Goals
Team 1	
Team 2	
Team 3	
Team 4	

 = 5 goals

Which team scored the most goals?

Which team scored the least goals?

How many more goals did team 1 score than team 3?

What other questions could you ask about the pictogram?

Activity 1 Pictograms

Teams	Goals
Team 1	
Team 2	
Team 3	
Team 4	

 = 5 goals

Which team scored the most goals?

Team 1 scored the most goals.

Which team scored the least goals?

Team 3 scored the least goals.

How many more goals did team 1 score than team 3?

Team 1 scored 10 more goals than team 3.

What other questions could you ask about the pictogram?

Example answer: Which teams scored the same amount of goals?

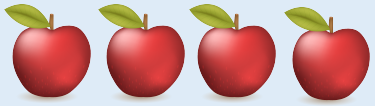
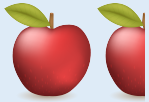
Activity 2 Pictograms

Complete the pictogram using the information.

- Group 2 collected 40 apples.
- Group 4 collected half as many apples as group 1.
- Group 5 collected 20 more apples than group 3.

How many apples did each group collect?

 = 8 apples

Group	Apples
1	
2	
3	
4	
5	

What does the other symbol represent?

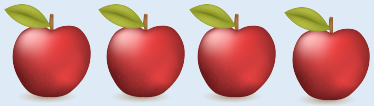
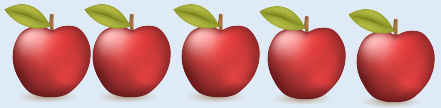
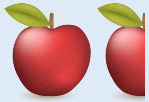
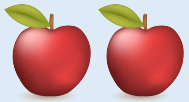
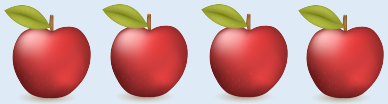
Activity 2 Pictograms

Complete the pictogram using the information.

- Group 2 collected 40 apples.
- Group 4 collected half as many apples as group 1.
- Group 5 collected 20 more apples than group 3.

How many apples did each group collect?

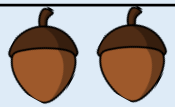
 = 8 apples

Group	Apples
1	
2	
3	
4	
5	

Activity 2 Pictograms

Complete the pictogram to show how many acorns each group collected.

 = 10 acorns

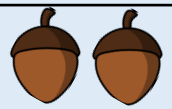
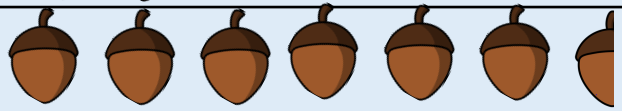
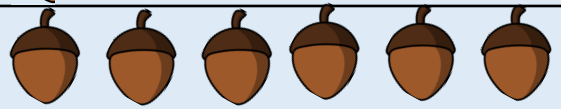
Group	Acorns
1	
2	
3	
4	
5	
6	

- Group 5 collected twice as many as group 1.
- Group 3 collected 35 more acorns than group 6.
- Group 4 collected a quarter of the amount group 2 collected.

Activity 2 Pictograms

Complete the pictogram to show how many acorns each group collected.

 = 10 acorns

Group	Acorns
1	
2	
3	
4	
5	
6	

- Group 5 collected twice as many as group 1.
- Group 3 collected 35 more acorns than group 6.
- Group 4 collected a quarter of the amount group 2 collected.

Activity 3 Pictograms

Class 3 are counting the colour of cars that pass the school.

Red	Blue	Black	Silver	White	Other
12	6	14	10	14	2

Draw a pictogram to represent their findings.

What other questions could you ask about the pictogram?

Activity 3 Pictograms

Class 3 are counting the colour of cars that pass the school.

Red	Blue	Black	Silver	White	Other
12	6	14	10	14	2

Colour	Number of Cars
Red	
Blue	
Black	
Silver	
White	
Other	

= 2 cars

Activity 3 Pictograms

Blue class are counting the trophies the school won in different sports events.

Football	Baseball	Basketball	Volleyball	Swimming
8	2	1	3	10

Draw a pictogram to represent their winnings.

Activity 3 Pictograms

Blue class are counting the trophies the school won in different sports events.

Football	Baseball	Basketball	Volleyball	Swimming
8	2	1	3	10

Sport	Number of Trophies
Football	
Baseball	
Basketball	
Volleyball	
Swimming	

Reasoning - 1 Pictogram

Zach, Malachi and Leanna record the scores of six football matches. Unfortunately, Zach spilt paint on them. Record the results based on what the children remember.

Match	Number of goals
1	
2	
3	
4	
5	
6	

Reasoning - 1 Pictogram

Zach, Malachi and Leanna record the scores of six football matches. Unfortunately, Zach spilt paint on them. Record the results based on what the children remember.

Zach

Match 2 had 2 more goals than match 3.

Match 5 has less goals than match 1.

Malachi

Leanna

Match 4 had twice as many goals as match 3.

Match	Number of goals
1	⚽ ⚽ ⚽
2	
3	⚽
4	
5	⚽
6	⚽ ⚽ ⚽ ⚽ ⚽

Reasoning - 1 Pictogram

Zach, Malachi and Leanna record the scores of six football matches. Unfortunately, Zach spilt paint on them. Record the results based on what the children remember.

Match	Number of goals
1	
2	
3	
4	
5	
6	

Reasoning - 2 Pictogram

Rosie and Esin are making pictograms to show how many sweets each class won at the school fair.

Rosie

Class	Number of sweets
1	
2	
3	
4	
5	
6	

= 5 sweets

Class	Number of sweets
1	
2	
3	
4	
5	
6	

Esin

= 10 sweets

What's the same and what's different about their pictograms?
Whose pictogram do you prefer and why?

Reasoning - 2 Pictogram

Rosie and Esin are making pictograms to show how many sweets each class won at the school fair.

Rosie

Class	Number of sweets
1	
2	
3	
4	
5	
6	

= 5 sweets

Class	Number of sweets
1	
2	
3	
4	
5	
6	

Esin

= 10 sweets

Same image/symbol used for the key, same total of sweets, the keys have different values.

Discussion

Pictogram

What is each symbol worth?

What does half of the symbol represent?
Is it always possible to use half of a symbol? Why?

What other questions could you ask about the pictogram?

What would each symbol represent in your pictogram? Have you used the same key as a friend? Could it be represented in different ways?

Bar Charts

3

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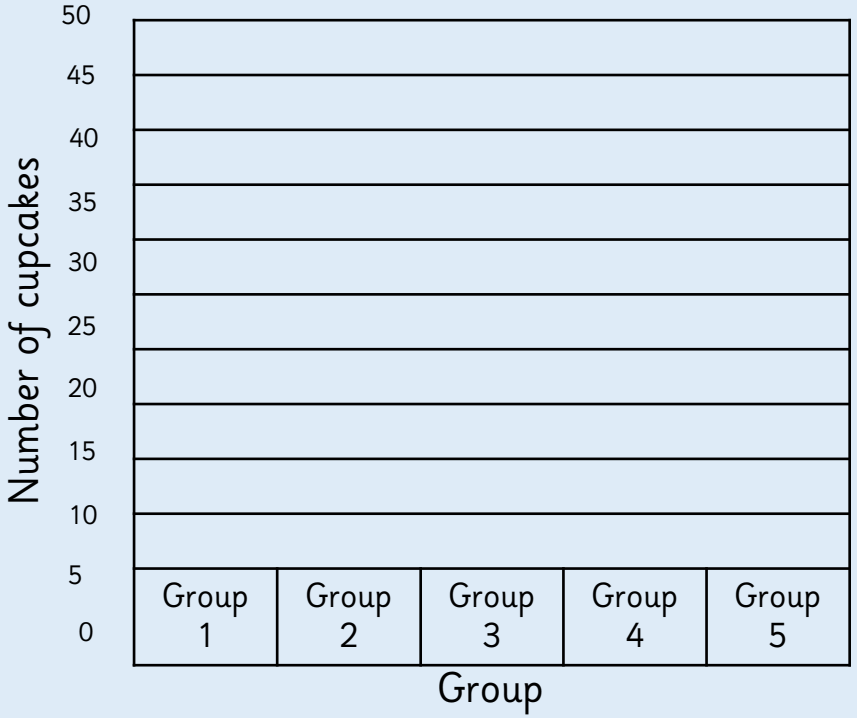
Activity 1 Bar Charts

Use the information from the pictogram to complete the bar chart.

Group	Number of cupcakes eaten
1	
2	
3	
4	
5	

 = 5 cupcakes



A bar chart to show the number of cupcakes eaten

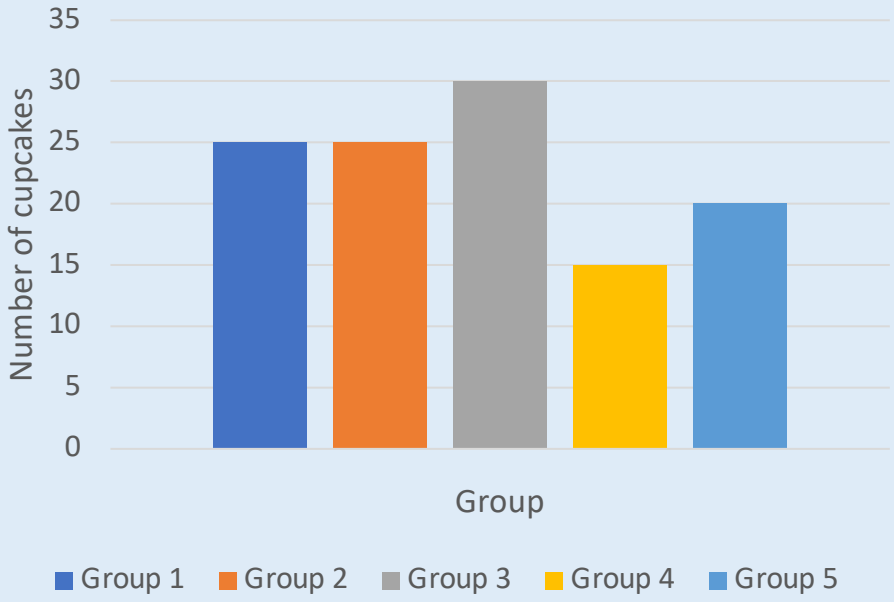
What's the same and what's different about the pictogram and the bar chart?

Activity 1 Bar Charts

Use the information from the pictogram to complete the bar chart.

Group	Number of cupcakes eaten
1	
2	
3	
4	
5	

 = 5 cupcakes

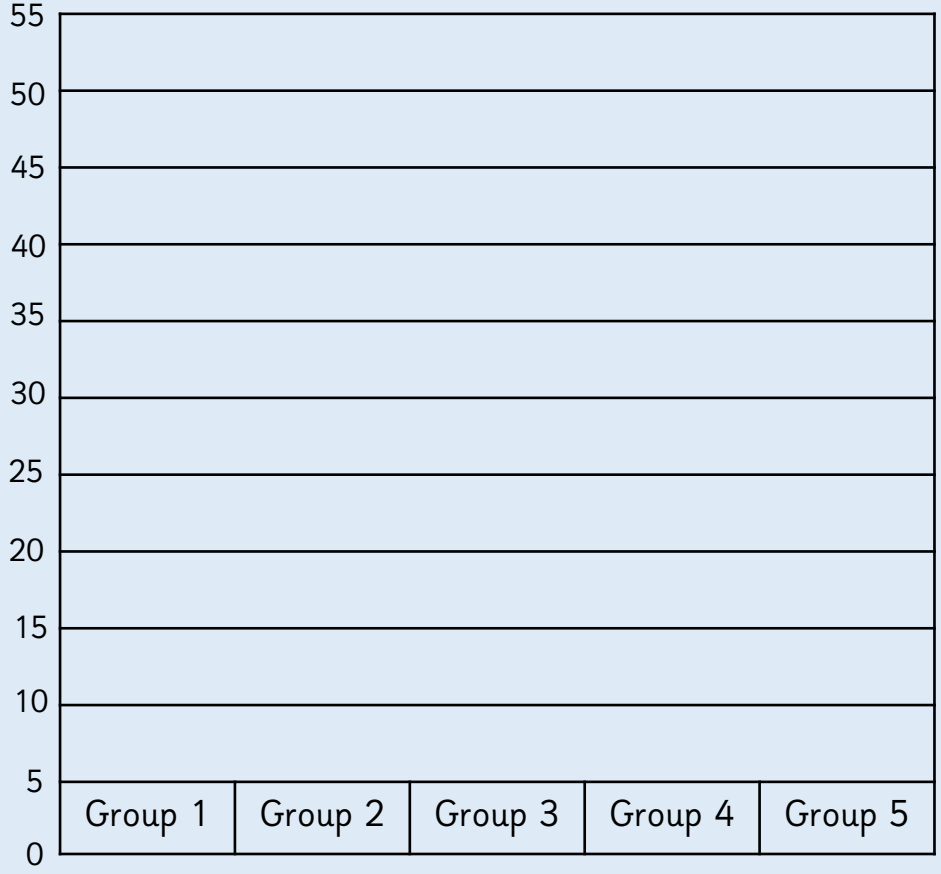


A bar chart to show the number of cupcakes eaten

Activity 1 Bar Charts

Use the information from the pictogram to complete the bar chart.

Group	Cookies = 5 cookies
1	
2	
3	
4	
5	

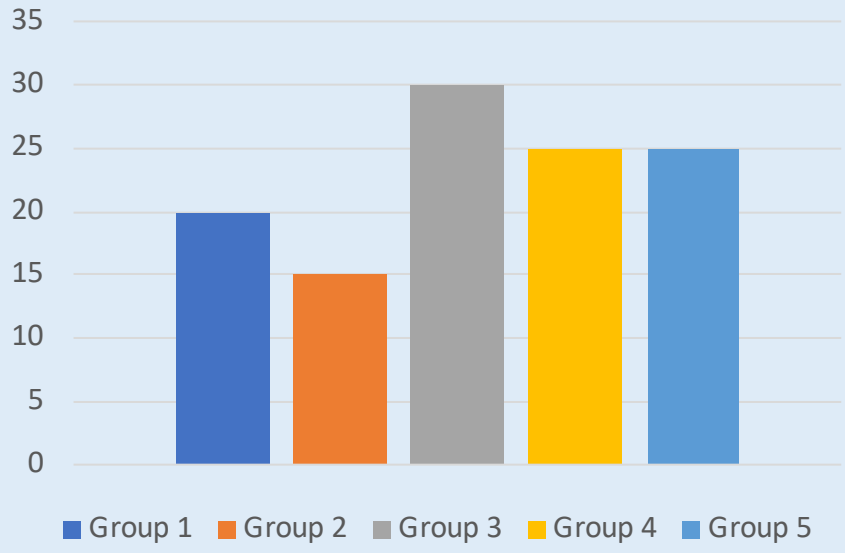


A bar chart to show the number of cookies eaten.

Activity 1 Bar Charts

Use the information from the pictogram to complete the bar chart.

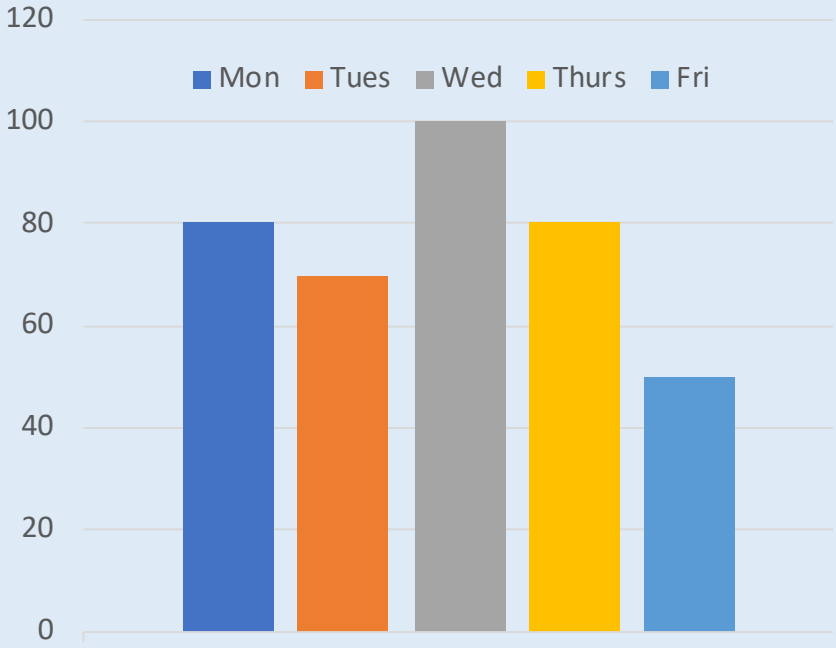
Group	Cookies = 5 cookies
1	4
2	3
3	6
4	5
5	5



A bar chart to show the number of cookies eaten.

Activity 2 Bar Charts

The bar chart shows how many children attend after school clubs.

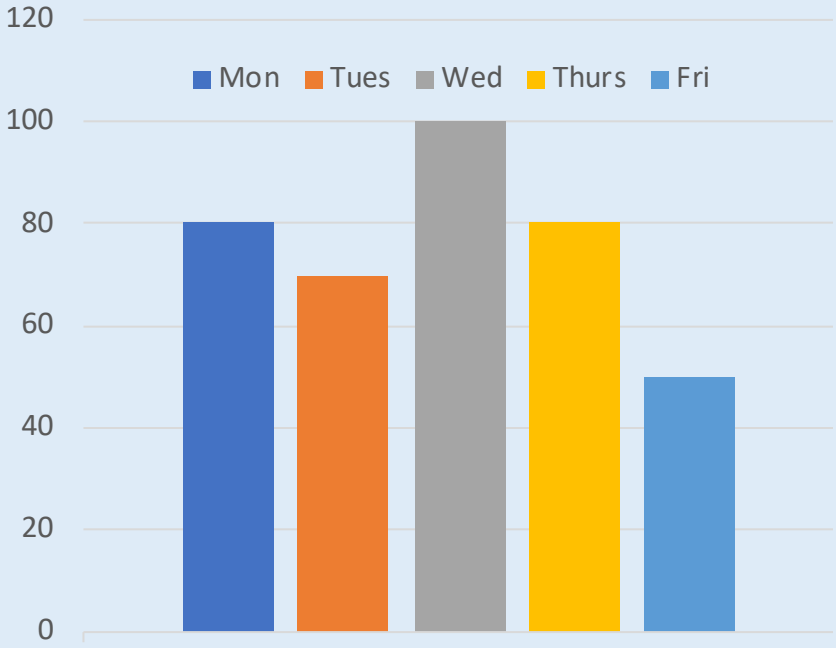


Which day is the most popular?
Which day is the least popular?
What is difference between the number of children attending on Tuesday and on Thursday?
What information is missing from the bar chart?

How does the bar chart help you understand the information?

Activity 2 Bar Charts

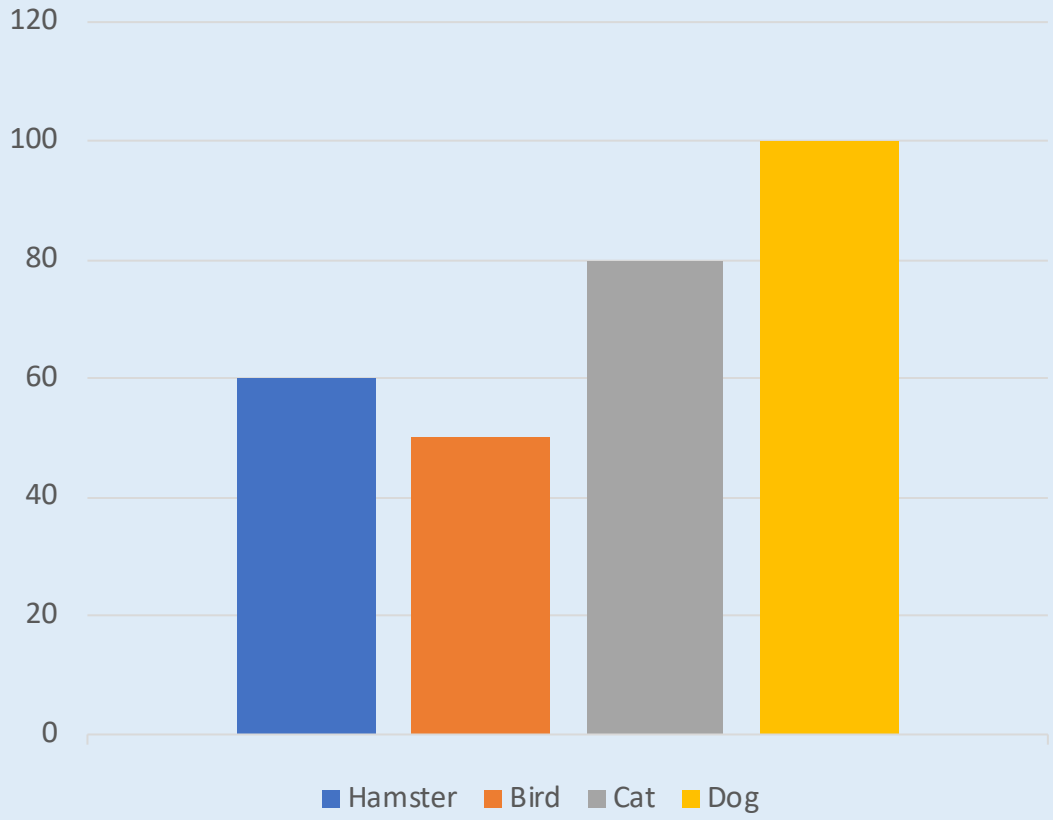
The bar chart shows how many children attend after school clubs.



Which day is the most popular? Wednesday
Which day is the least popular? Friday
What is difference between the number of children attending on Tuesday and on Thursday? 10
What information is missing from the bar chart?

Activity 2 Bar Charts

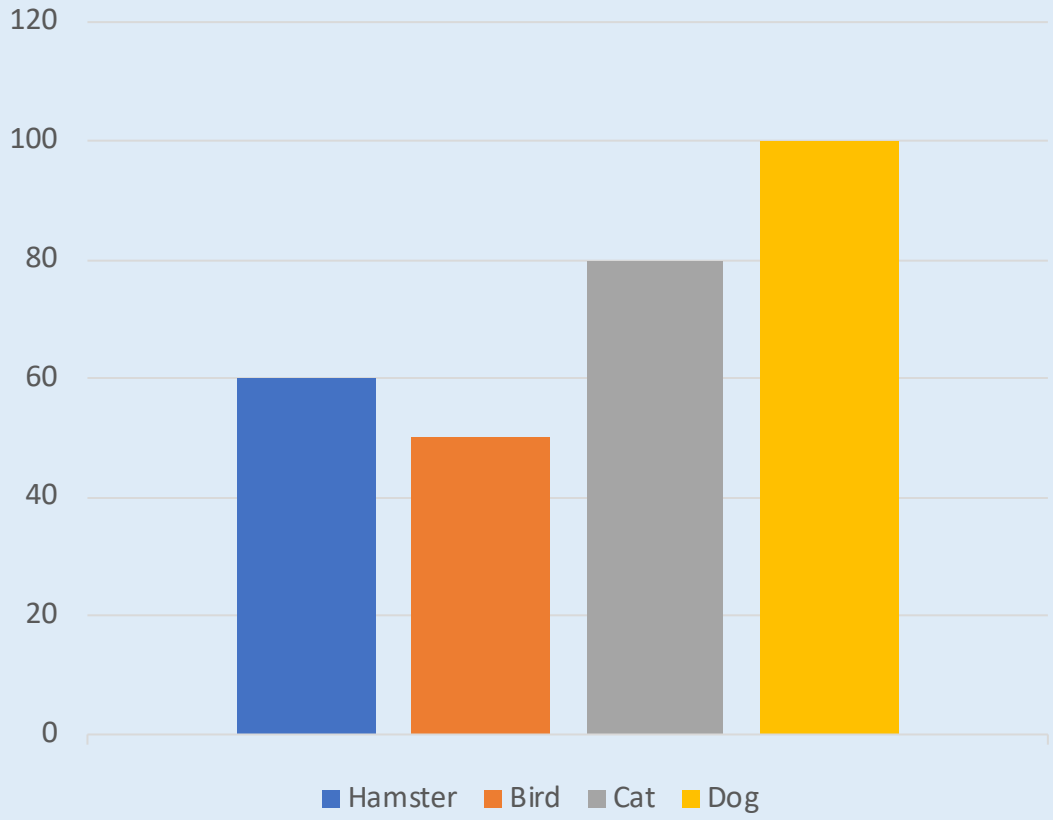
The bar chart shows the popularity of animals.



- Which animal is the most popular?
- By how many children?
- Which animal is the least popular?
- What is the difference between the number of children owning dogs and birds?

Activity 2 Bar Charts

The bar chart shows the popularity of animals.



- Which animal is the most popular? Dog
- By how many children? 20
- Which animal is the least popular? Bird
- What is the difference between the number of children owning dogs and birds? 50

Activity 3 Bar Charts

Here is a tally chart showing the number of children in each sports club. Draw a bar chart to represent the data.

Sport	Tally	Total
Football	𝍸 𝍸 𝍸	15
Tennis	𝍸 𝍸 𝍷	
Rugby	𝍸 𝍸 𝍸 |	
Cricket	𝍸 𝍸 ||	
Basketball	𝍸 ||	

Which scale should we use?

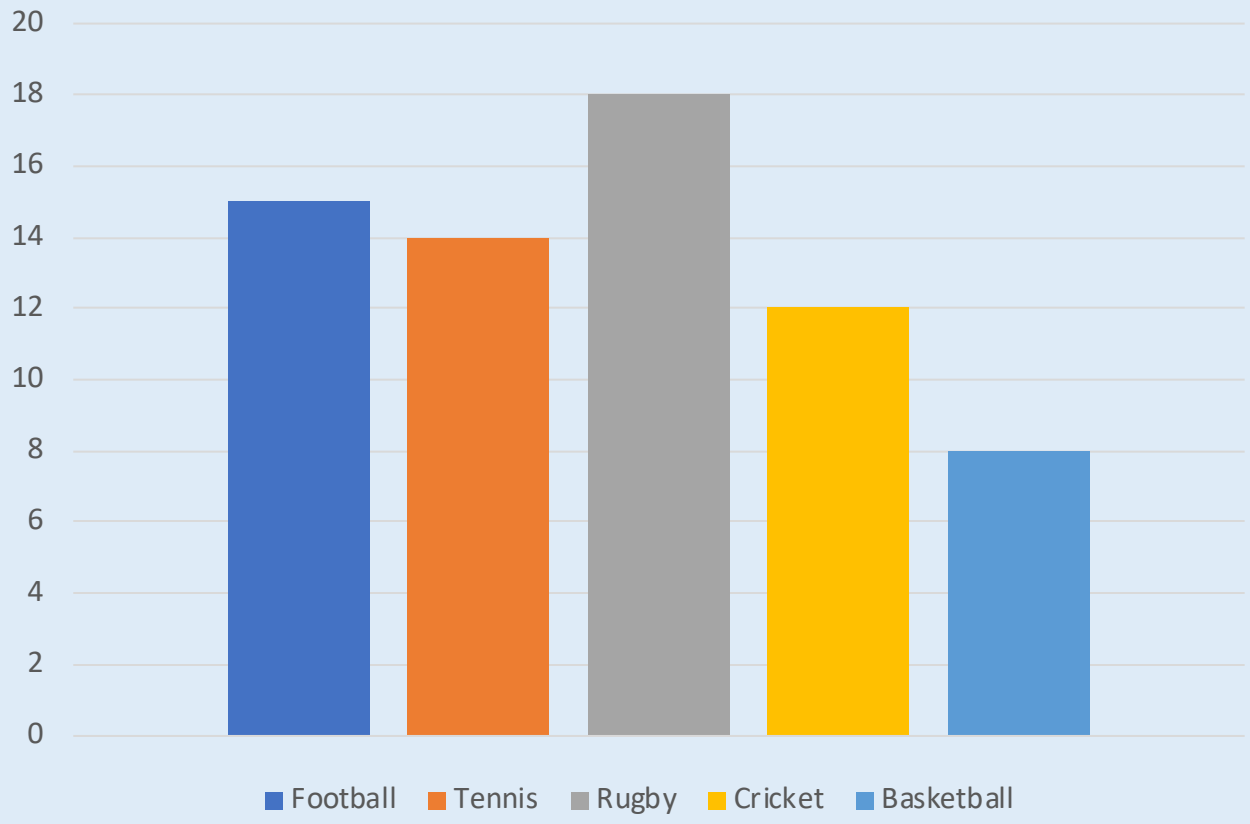
Activity 3 Bar Charts

Here is a tally chart showing the number of children in each sports club. Draw a bar chart to represent the data.

Sport	Tally	Total
Football	𝍸 𝍸 𝍸	15
Tennis	𝍸 𝍸 𝍷	14
Rugby	𝍸 𝍸 𝍸 | | |	18
Cricket	𝍸 𝍸 | |	12
Basketball	𝍸 | | |	8

Activity 3 Bar Charts

Here is a tally chart showing the number of children in each sports club. Draw a bar chart to represent the data.



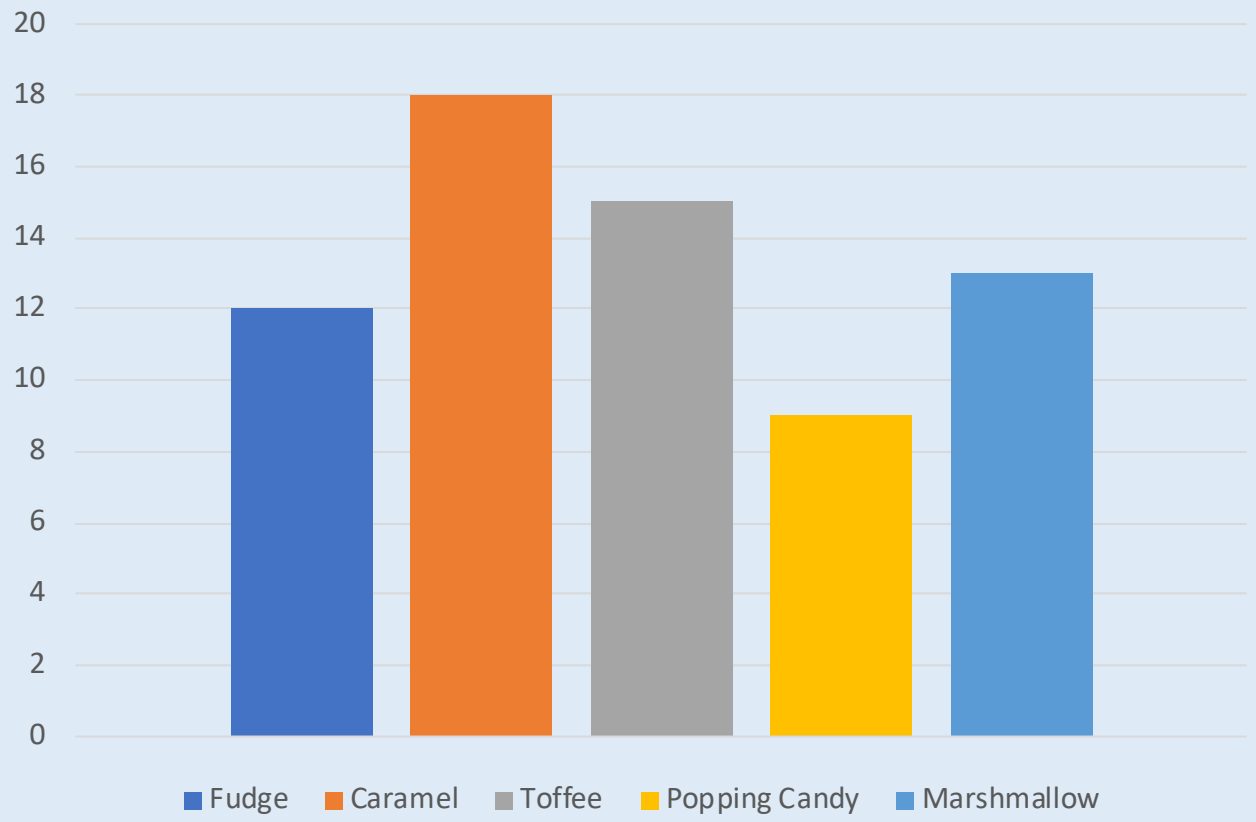
Activity 3 Bar Charts

Use this information about children's favourite sweets in the table to draw a bar chart.

Sweet	Tally	Number
Fudge	𝍸 𝍸 ||	12
Caramel	𝍸 𝍸 𝍸 |||	18
Toffee	𝍸 𝍸 𝍸	15
Popping Candy	𝍸 ||||	9
Marshmallow	𝍸 |||	13

Activity 3 Bar Charts

Use this information about children's favourite sweets in the table to draw a bar chart.



Reasoning - 1 Bar Chart

Which would be more suitable to represent this information, a bar chart or a pictogram? Explain why.

Child	Number of Skips in 30 seconds
Zach	8
Leanna	17
Esin	15
Malachi	12

Reasoning - 1 Bar Chart

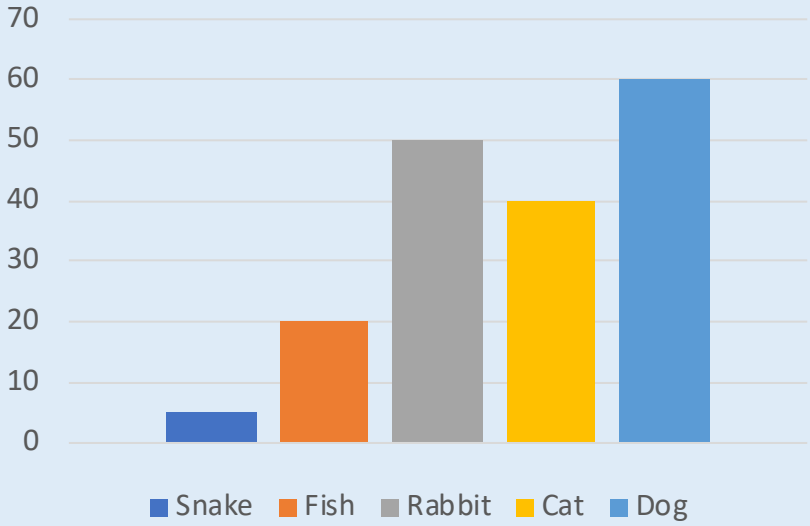
Which would be more suitable to represent this information, a bar chart or a pictogram? Explain why.

Child	Number of Skips in 30 seconds
Zach	8
Leanna	17
Esin	15
Malachi	12

I think a bar chart would be more suitable because in a pictogram you would need to draw symbols representing 1 or 2 which would make it less efficient. Children may draw both to experiment which representation is clearer.

Reasoning - 2 Bar Chart

Tia and Zach have drawn bar charts to show how many people have pets.

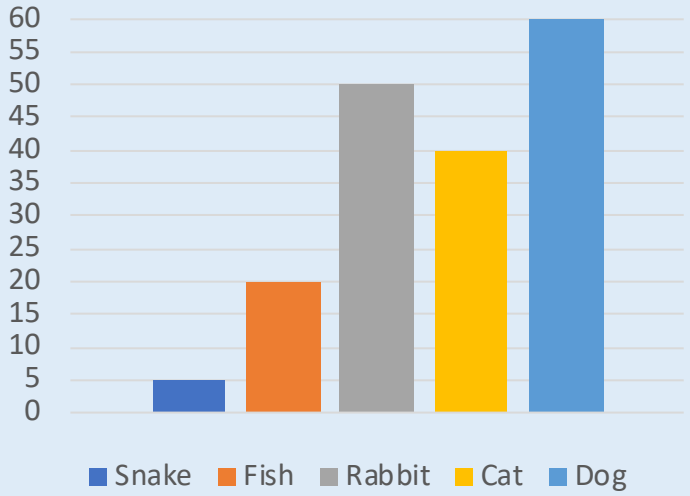


Tia

I asked more people because my scale goes up in larger jumps.

Reasoning - 2 Bar Chart

Tia and Zach have drawn bar charts to show how many people have pets.



Zach

I asked more people because my scale goes up in larger jumps.

Who is correct? Explain why.

Reasoning - 2 Bar Chart

Tia and Zach have drawn bar charts to show how many people have pets.

They are both incorrect as they asked the same amount of people but they have just used different scales on their bar charts. Children would discuss which scale is more efficient.

Discussion

Bar Chart

What's the same and what's different about the pictogram and the bar chart?

How does the bar chart help you understand the information?

Which scale should we use? How can we decide whether to have a scale going up in intervals of 1, 2, 5 or 10?

What other questions could you ask about the bar chart?

Tables

3

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Activity 1 Tables

The table shows which sports children play.

	Tia	Zach	Esin	Malachi	Leanna	Rosie
Football	✓		✓	✓		✓
Rugby			✓		✓	
Tennis	✓	✓		✓		✓
Cricket			✓		✓	
Basketball		✓	✓	✓		✓

How many children play tennis?
Which sports does Malachi play?
Which children play football and tennis?
Which child plays the most sports?

What information can we gather from the table?

Activity 1 Tables

The table shows which sports children play.

	Tia	Zach	Esin	Malachi	Leanna	Rosie
Football	✓		✓	✓		✓
Rugby			✓		✓	
Tennis	✓	✓		✓		✓
Cricket			✓		✓	
Basketball		✓	✓	✓		✓

How many children play tennis? 4

Which sports does Malachi play? Football, tennis, and basketball

Which children play football and tennis? Tia, Malachi, and Rosie

Which child plays the most sports? Esin

Activity 1 Tables

The table shows which sports children play.

	Jonas	Evan	Shan	Zara	Aaron	Priya
Running	✓		✓	✓		✓
Netball			✓		✓	
Rugby	✓	✓				✓
Swimming			✓		✓	
Volleyball		✓	✓			✓

Which children play netball and swim?
Which is the most popular sport?
Which is the least popular sport?
Who plays the most sports?

Activity 1 Tables

The table shows which sports children play.

	Jonas	Evan	Shan	Zara	Aaron	Priya
Running	✓		✓	✓		✓
Netball			✓		✓	
Rugby	✓	✓				✓
Swimming			✓		✓	
Volleyball		✓	✓			✓

Which children play netball and swim? Shan and Aaron

Which is the most popular sport? Running

Which is the least popular sport? Netball and swimming

Who plays the most sports? Shan

Activity 2 Tables

The table shows the increase in bus ticket prices.

- The cost of Zach's new ticket is 60p. How much was his ticket last year? How much has the price increased by?
- Which ticket price has increased the most from 2016 – 2017?
- Which ticket price has increased the least?

1st January	
2016	2017
44p	49p
56p	60p
64p	69p
76p	85p
85p	93p
98p	£1.03
£1.05	£1.11

Can you explain to a friend how to read the table?

Activity 2 Tables

The table shows the increase in bus ticket prices.

- The cost of Zach's new ticket is 60p. How much was his ticket last year? How much has the price increased by? Zach's ticket last year cost 56p and it increased by 4p
- Which ticket price has increased the most from 2016 – 2017? 76p increased to 85p
- Which ticket price has increased the least? 56p increased to 60p

1st January	
2016	2017
44p	49p
56p	60p
64p	69p
76p	85p
85p	93p
98p	£1.03
£1.05	£1.11

Activity 2 Tables

The table shows the increase in bus ticket prices.

1st January	
2018	2019
47p	49p
54p	60p
63p	69p
72p	87p
93p	98p
£1.03	£1.16

- The cost of Joel's new ticket is 87p. How much has his ticket increased in price?

- What was the largest increase in price of any ticket?

- What was the smallest increase in price of any ticket?

Activity 2 Tables

The table shows the increase in bus ticket prices.

1st January	
2018	2019
47p	49p
54p	60p
63p	69p
72p	87p
93p	98p
£1.03	£1.16

- The cost of Joel's new ticket is 87p.
How much has his ticket increased in price?
It increased by 15p
- What was the largest increase in price of any ticket?
From 72p to 87p – an increase of 15p
- What was the smallest increase in price of any ticket?
From 47p to 49p – an increase of 2p

Reasoning - 1 Tables

How many questions can you create for your partner about this table?

Day	Number of hours shop is open
Monday	12
Tuesday	7
Wednesday	10
Thursday	4
Friday	8
Saturday	8

Reasoning - 1 Tables

How many questions can you create for your partner about this table?

How many hours does the shop open for in total?
Which day does it open the longest?
How many more hours does the shop open for on Saturday than Thursday?
Which day was the shop open the shortest amount of time?

Day	Number of hours shop is open
Monday	12
Tuesday	7
Wednesday	10
Thursday	4
Friday	8
Saturday	8

Reasoning - 1 Tables

Esin has created a table to show how many boys and girls took part in after school clubs last week.

Day	Boys	Girls
Monday	9	7
Tuesday	8	8
Wednesday	13	11
Thursday	18	12
Friday	11	9

Esin

106 boys took part in after school clubs last week.

Is Esin correct? Explain why.

Reasoning - 1 Tables

Esin has created a table to show how many boys and girls took part in after school clubs last week.

Day	Boys	Girls
Monday	9	7
Tuesday	8	8
Wednesday	13	11
Thursday	18	12
Friday	11	9

Esin is incorrect. She has counted all the children rather than just the boys. 59 boys took part in after school clubs last week.

Discussion

Tables

What information can we gather from the table?

Can you explain to a friend how to read the table?

Where do we need to use tables in real life?

What other questions could I ask and answer using the information in the table?