Year 4

Small Steps Guidance and Examples

Block 4 – Statistics

White Rose Maths

Year 4 – Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number – Place Value				Number- Addition and Subtraction			Measurement - Length and Perimeter	Number- Multiplication and Division			Consolidation
Spring	Number- Multiplication and Division			Measurement - Area	Fractions				Decimals			Consolidation
Summer	Decimals		Measurement- Money		Time	Statistics		Geometry- Properties of Shape			Geometry- Position and Direction	Consolidation

Overview

Small Steps

- Interpret charts
- Comparison, sum and difference
- Introducing line graphs
- Line graphs

NC Objectives

Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.

Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

Interpret Charts

Notes and Guidance

Children revisit how to use bar charts, pictograms and tables to interpret and present discrete data.
They decide which scale will be the most appropriate when drawing their own bar charts.
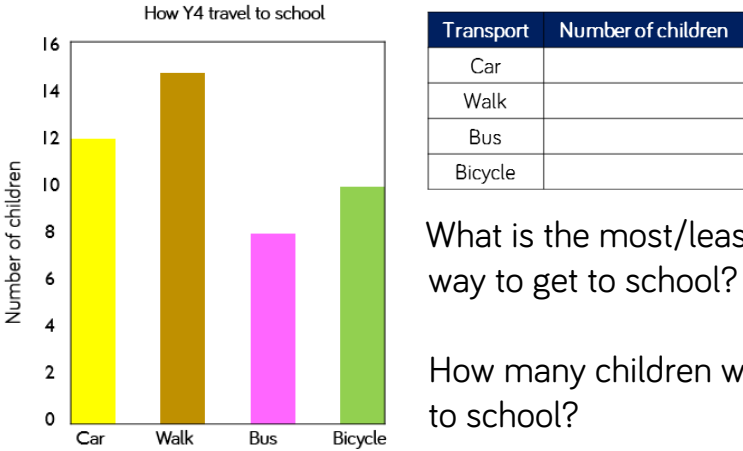
Children gather their own data using tally charts and then present the data in a bar chart. They ask and answer questions about the data they have gathered.

Mathematical Talk

What different ways are there to present data?
What do you notice about the scale of the bar chart?
What other way could you present the data shown in the bar chart?
What other questions could you ask about the data?
What is the same and what is different about the way in which the data is presented?
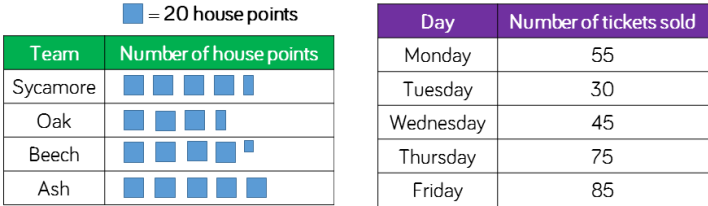What scale will you use for your own bar chart? Why?

Varied Fluency

1 Complete the table using the information in the bar chart.

How Y4 travel to school

Transport	Number of children
Car	
Walk	
Bus	
Bicycle	

What is the most/least popular way to get to school?

How many children walk to school?

2 Produce your own table/bar chart/pictogram showing how the children in your class travel to school.

3 Represent the data in each table as a bar chart.

= 20 house points

Team	Number of house points
Sycamore	
Oak	
Beech	
Ash	

Day	Number of tickets sold
Monday	55
Tuesday	30
Wednesday	45
Thursday	75
Friday	85

Interpret Charts

Reasoning and Problem Solving

Halifax City Football Club sold the following number of Season Tickets:
- Male Adults – 6,382
- Female Adults – 5,850
- Boys – 3,209
- Girls – 5,057

Would you use a bar chart, table or pictogram to represent this data? Explain why.

Possible answer: I would represent the data in a table, because it would be difficult to show the numbers accurately in a pictogram or bar chart.

Jessica wants to use a pictogram to represent the favourite drinks of everyone in her class.

I will use this image 🥛 to represent 5 children

Explain why this is not a good idea.

It is not a good idea, because it would be difficult to show amounts which are not multiples of 5

Here is some information about the number of tickets sold for a concert.

Day	Number of tickets sold
Monday	55
Tuesday	30
Wednesday	45
Thursday	75
Friday	85

Jamie starts to create a bar chart to represent the number of concert tickets sold during the week.
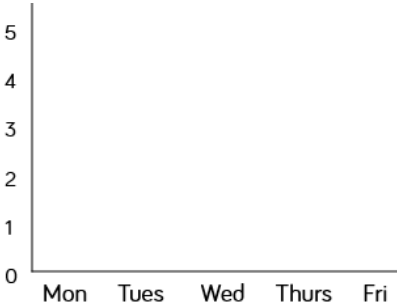
What advice would you give Jamie about the scale he has chosen?
What would be a better scale to use?

I would tell Jamie to use a different scale for his bar chart, because the numbers in the table are quite large. The chart could go up in 5s because the numbers are all multiples of 5.

Comparison, Sum & Difference

Notes and Guidance

Children solve comparison, sum and difference problems using discrete data with a range of scales.

They use their addition and subtraction skills to answer questions accurately and ask their own questions about the data in pictograms, bar charts and tables.

Although examples of data are given, children need to be given opportunities to ask and answer questions relating to data they have collected themselves.

Mathematical Talk

What does a full circle represent in the pictogram?

What does a half/quarter/three quarters of the circle represent?

What other questions could we ask about the pictogram?

What other questions could we ask about the table?

What data could we collect as a class?

What questions could we ask about the data?

Varied Fluency

1

Team	Number of House points $\bullet$ = 20 points
Sycamore	
Oak	
Beech	
Ash	

How many more points do Sycamore have than Ash?

How many points do Beech and Oak have altogether?

How many more points do Ash need to catch up with Oak?

2

Activity	Number of votes
Bowling	9
Cinema	10
Swimming	7
Ice-skating	14

How many people voted in total?

$\frac{1}{4}$ of the votes were for _____.

7 more people voted for _____ than _____.

3 As a class decide on some data that you would like to collect. For example, favourite books, films, food. Collect and record the data in a table. Children then choose to represent the data in a pictogram or a bar chart, giving reasons for their choices.

Create questions for a friend to answer using their data.

Comparison, Sum & Difference

Reasoning and Problem Solving

Our Favourite Ice-cream
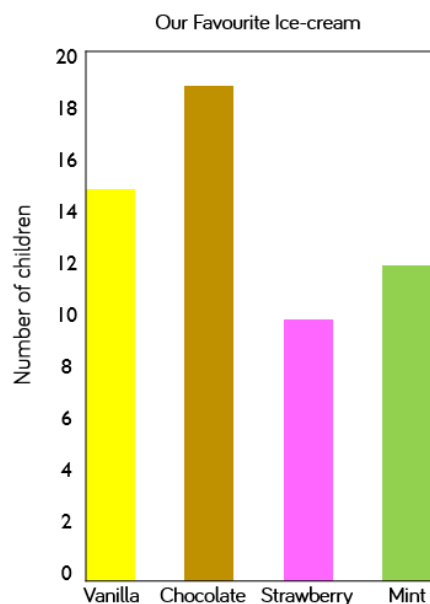
Hannah says,

We asked 54 people altogether.

Can you spot Hannah's mistake? How many people were asked altogether?

Hannah has read the bar chart incorrectly. She thinks 14 people like vanilla, 18 like chocolate, 10 like strawberry and 12 like mint.
19 people like vanilla, 15 like chocolate, 10 like strawberry and 12 like mint. That means 56 people were asked altogether

Attraction	Number of visitors on Saturday	Number of visitors on Sunday
Animal World Zoo	1,282	2,564
Maltings Castle	2,045	1,820
Primrose Park	1,952	1,325
Film Land Cinema	2,054	1,595

True or false?

- The same number of people visited Maltings Castle as Film Land Cinema on Saturday.
- Double the number of people visited Animal World Zoo on Sunday than Saturday.
- The least popular attraction of the weekend was Primrose Park.

- FALSE
- TRUE
- TRUE

Animal World Zoo – 3,846
Maltings Castle – 3,865
Primrose Park - 3,277
Film Land Cinema - 3,649

Introducing Line Graphs

Notes and Guidance

Children are introduced to line graphs in the context of time. They use their knowledge of scales to read a time graph accurately and create their own graphs to represent continuous data.

It is important that children understand that continuous data can be measured.. For example, time, temperature, height.

Although examples of data are given, children need to be given opportunities to interpret and represent data they have collected themselves.

Mathematical Talk

How is the graph different to a bar chart?

Which is the x and y axis? What do they represent?

How would you read the temperature at 9.30 a.m?

How would you work out what time it was when the temperature was 7 degrees?

What scale will you use for your graph? Why?

Varied Fluency

1. Show children a selection of line graphs in the context of time. Discuss what each axis is called and what they represent. Children could draw a simple line graph and label the axis.

2. The graph shows the temperature in the playground during a morning in April.
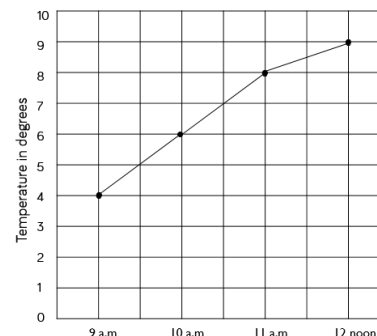
The temperature at 9 a.m is _____ degrees.

The warmest time of the morning is _____

3. Class 4 grew a plant. They measured the height of the plant every week for 6 weeks. The table shows the height of the plant each week.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
4 cm	7 cm	9 cm	12 cm	14 cm	17 cm

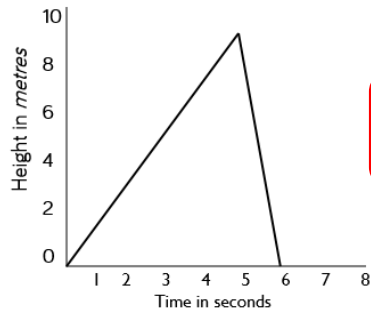Create a line graph to represent the information.
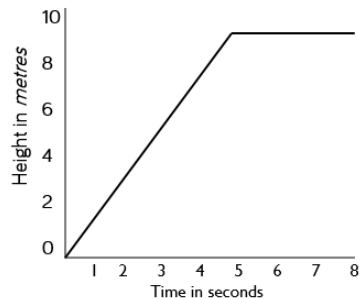
Introducing Line Graphs

Reasoning and Problem Solving

Josh launched a toy rocket into the sky. After 5 seconds the rocket fell to the ground.
Which graph shows this?

Graph A

Graph B

Explain how you know.
Make up your own story for the other graph.

Graph A – the height of the rocket increases then decreases quickly again after 5 seconds.

Example story – a bird flew up from the ground. It continued to fly upwards for 5 seconds then flew at the same height for another 3 seconds.

The graph shows the number of dogs walking in the park one afternoon.
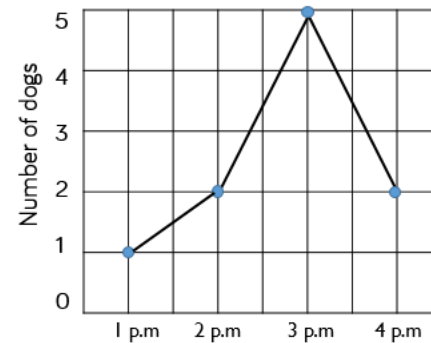
Dylan says,

At half past one there are 1.5 dogs in the park.

Why is Dylan incorrect?

What would be a better way of presenting this data?

Dylan is incorrect because you can not have 1.5 dogs. A better way of presenting this data would be using a bar chart, pictogram or table because the data is discrete.

Line Graphs

Notes and Guidance

Children solve comparison, sum and difference problems using continuous data with a range of scales.

They use their addition and subtraction skills to answer questions accurately and ask their own questions about the data in line graphs.

Although examples of data are given, children need to be given opportunities to ask and answer questions relating to data they have collected themselves.

Mathematical Talk

Is this discrete or continuous data? How do you know?

What do you notice about the scale of the graph?

How could you make sure you read the graph accurately?

What other questions could you ask about the graph?

What data could we collect as a class?

What questions could we ask about the data?

Varied Fluency

1 The graph shows the growth of a plant over 6 months.

- How tall was the plant in May?
- In what month did the plant first reach 50 cm?
- How many centimetres did the plant grow between March and July?
- What was the difference between the height of the plant in February and the height of the plant in April?
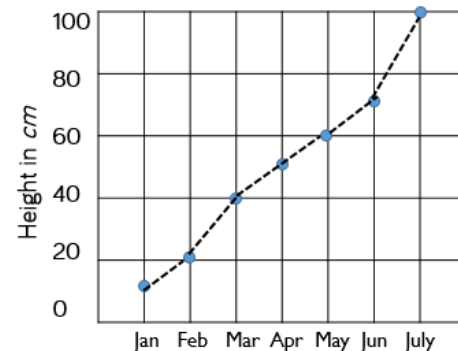
2 As a class decide on some data that you would like to collect. For example, length of shadows during the day, temperature of a drink.

Collect and record the data in a table.

Children then present their findings in a line graph and create questions for a friend to answer using their data.
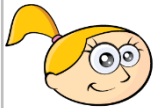
Line Graphs

Reasoning and Problem Solving

Katie measured the temperature of a hot drink every 30 minutes for 2 hours. The graph shows Katie's results.
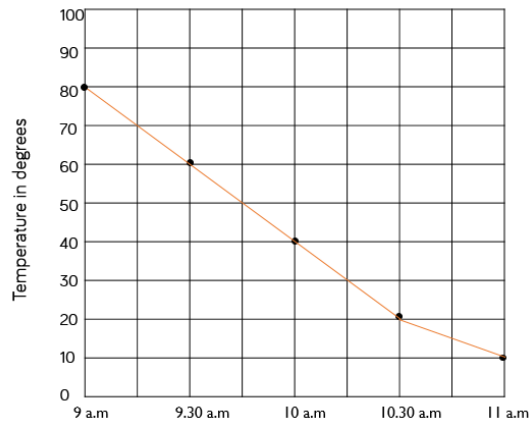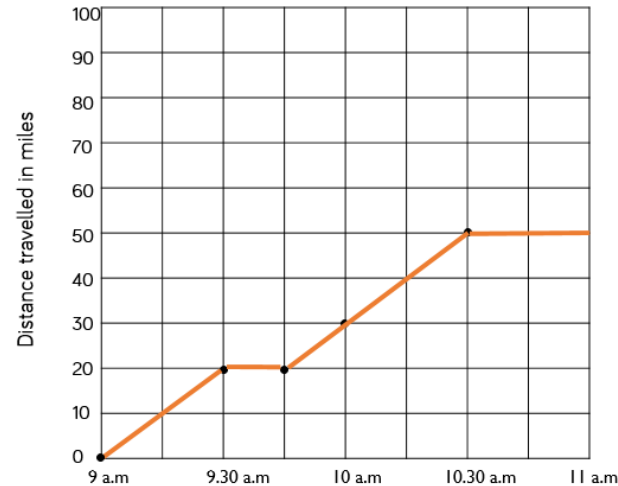

Katie says,

In the first 45 minutes the temperature of the tea had dropped by 20 degrees.

Do you agree with Katie?
Explain why.

I do not agree with Katie. At 9 am the temperature is 80 degrees and at 9.45 am the temperature is 50 degrees, so it had dropped 30 degrees not 20 degrees.

Write a story to match the graph.

Example:
John drove 20 miles in his lorry. At half past 9 he had a 15 minute rest then drove for another 30 miles until he reached his destination at 10.30 am