

## Unit 12

Five daily lessons

Handling Data

Year 3

Spring term

### Unit Objectives

- Solve a given problem by organising and interpreting data in bar charts – intervals labelled in ones then twos. (Page 93)



Year 2

- Solve a given problem by sorting, classifying and organising information in a block graph.



Year 4

- Solve a problem by collecting quickly, organising, representing and interpreting data in bar charts – intervals labelled in 2's, 5's, 10's or 20's.

### Resources needed to teach this unit:

Number fans  
Resource sheets 12.1 and 12.2  
Activity Sheet 12.1  
Clipboards  
Large squared paper  
Large paper


### Interactive Teaching programs

ITP – Bar Charts

(Key objectives in bold)




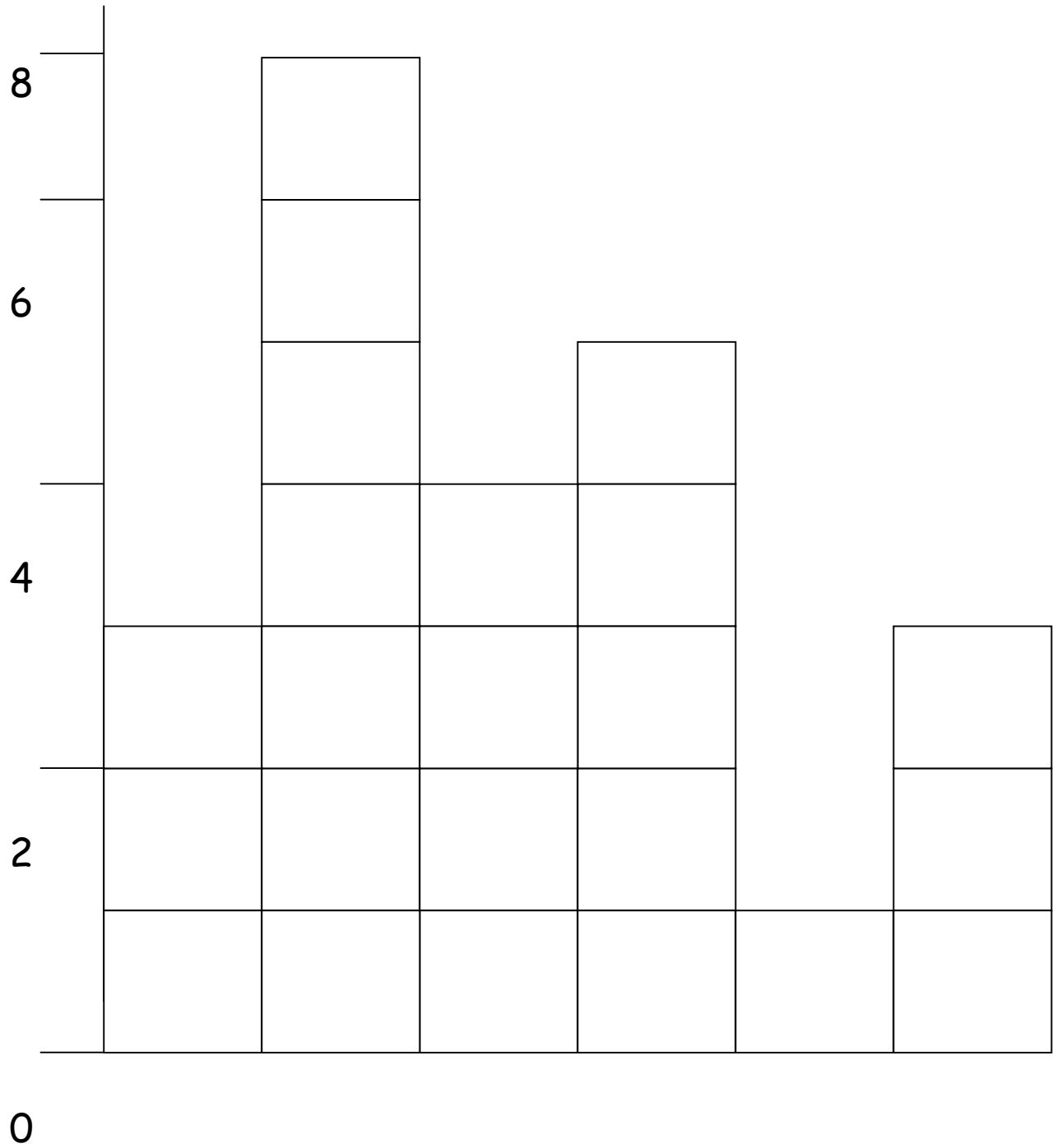
Planning sheet		Day One	Unit 12 Handling Data	Term: <i>Spring</i>	Year Group: 3
Oral and Mental			Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions	
<p>Recall addition and subtraction facts for all numbers up to 20.</p> <p>VOCABULARY: Total Difference Double Half More/less</p> <p>RESOURCES: Number fans</p>	<ul style="list-style-type: none"> <li>Play a 'Show me' game using number fans.</li> <li>Tell the children that you will give them the answer and they need to show two numbers that total it, e.g. 'Show me two numbers that total...13'</li> <li>Do the same for numbers that have a difference, e.g. 'Show me two numbers with a difference of ...7'.</li> <li>Go on to asking other questions, such as; Q. What is double ...? Q. Show me half of ...? Q. What is 2 more than/less than ...? Q. Show me two odd numbers that total ...?</li> </ul>	<ul style="list-style-type: none"> <li>Solve a given problem by organising and interpreting data in bar charts – intervals labelled in ones then twos.</li> </ul> <p>VOCABULARY: Bar chart Column Axes Most Least Popular More Less</p> <p>RESOURCES: ITP – bar charts Large squared paper</p>	<ul style="list-style-type: none"> <li>Tell children that you are going to find out which is the favourite colour in your class.</li> <li>Write up a choice of colours on the board.</li> <li>When the children have decided on their favourite colour, ask them to vote.</li> <li>Place all the children that like the same colour in a straight line. Repeat with the other colours, so that they are beginning to look like the columns in a bar graph.</li> </ul> <p>Q. How many people like ....? Q. Which is the most popular? Q. Is it easy to work this out from where you are standing? Q. Could we draw how you look on the board so that we can see easily?</p> <ul style="list-style-type: none"> <li>Draw the children in their columns on the board (stick people or smiley faces) and ask the children to sit down.</li> <li>Draw both axes on the picture and demonstrate writing in the colours and numbers of children.</li> </ul> <p>Q. Now can we see the most and least popular colour?  <ul style="list-style-type: none"> <li>Next to that picture (if possible on squared paper), draw the same axes and instead of children draw the columns or 'bars'.</li> </ul> </p> <ul style="list-style-type: none"> <li>Tell the children that information is often shown this way instead of drawing the pictures.</li> </ul> <p>Q. Why do you think that is?  <ul style="list-style-type: none"> <li>Show the children a different bar chart (intervals labelled in ones) using the ITP.</li> <li>Look at the title and labels together and ensure that the children understand how to read information from the graph.</li> </ul> </p> <p><b>Activity</b> Children to answer a variety of questions relating to your bar graph. All children to be able to find a total for a specific column and most children to find the most and least popular. Higher ability children to start comparing and contrasting totals (eg. how much more popular was .... than ....?).</p>	<p>Look at the ITP bar chart again. Change the axis to intervals labelled in twos. Q. What have I done? Q. What has happened to the bar chart? Q. How did it change? Q. Will we get the same information? Look at some of the questions that the children have already answered to show that although the intervals have changed, the information stays the same.</p> <p><b>By the end of the lesson the children should be able to:</b></p> <p><b>Interpret data from a bar chart with intervals labelled in ones</b></p>	

Planning sheet	Day Two	Unit 12 Handling Data	Term: <i>Spring</i>	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Recall addition and subtraction facts for all numbers up to 20.</p> <p>VOCABULARY: Add Total</p> <p>RESOURCES: Number fans/whiteboards</p>	<ul style="list-style-type: none"> <li>Draw a triangle on the board and put a number between 10 and 20 inside it;  Explain that we are going to find three numbers to go on the corners of the triangle that add up to the number in the centre.</li> <li>Write one number up and ask the children to suggest the two other numbers with fans or whiteboards.</li> <li>Repeat for other numbers.</li> <li>Extend this using a square with four numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Solve a given problem by organising and interpreting data in bar charts – intervals labelled in ones then twos.</li> </ul> <p>VOCABULARY: Bar chart Column Axes Most Least Popular More Less</p> <p>RESOURCES: ITP – bar charts Resource Sheet 12.1</p>	<ul style="list-style-type: none"> <li>Tell the children that we are going to make our own bar chart of information today. Ask them to suggest ideas.</li> <li>Choose an idea and show the bar chart ITP.</li> <li>Q. What will the title of our bar chart be?</li> <li>Q. What will each column be labelled?</li> <li>Tell the children that each interval on the axis is going to go up in twos.</li> <li>Ask the children to vote and insert the data.</li> <li>Q. Which is most popular?</li> <li>Q. Which is least popular?</li> <li>Question children on total amounts for each column – to begin with, just those columns that are 2, 4, 6 and so on.</li> <li>Discuss how we know that a column is, for example, 3. Ask the children to look at a number line or counting stick and identify that 3 lies directly between 2 and 4.</li> <li>Repeat this with other numbers and link this to the axis on the bar chart.</li> <li>Continue asking questions about the data, ensuring that most children have a chance to read a column that is 1, 3, 5, 7 and so on.</li> </ul> <p><b>Activity</b> All children to interpret data from a bar chart with intervals of two. They could use the ITP bar chart as above or another of your choice. Ensure that lower ability children can read between the numbered intervals, using a number line to refer to if necessary. Once higher ability children are secure with this, an adult can work with them in order to introduce bar charts with intervals of 5.</p>	<p>Show the children the bar chart on resource sheet 12.1 Tell them that some labels are missing on the bar graph.</p> <p>Q. What could the graph be about?</p> <p>Q. What could the missing labels be?</p> <p>See how many different solutions the children can find for these. Choose one solution and ask the children to make up some questions to ask about that graph.</p> <p><b>By the end of the lesson children should be able to:</b></p> <p>Interpret data from a bar chart with intervals of two.</p>

Planning sheet		Day Three	Unit 12 Handling Data	Term: <i>Spring</i>	Year Group: 3
Oral and Mental		Main Teaching			Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions	
<p>Recall addition and subtraction facts for all numbers up to 20.</p> <p>VOCABULARY: Function machine Inverse</p> <p>RESOURCES: Resource sheet 12.2 Number fans</p>	<ul style="list-style-type: none"> <li>▪ Show the children the picture of the function machine (resource sheet 12.2) and explain what it is.</li> <li>▪ Choose a subtraction function, e.g. '-6' and put it in the machine.</li> <li>▪ Tell the children that you are going to put a number in the machine (eg. 13) and that they must show the number that will come out with their number fans.</li> <li>▪ Repeat this, changing the number going in, then changing the number that is subtracted.</li> <li>▪ Extend this by giving the children the number that has come out of the machine and asking them to work out the number that went in.</li> <li>▪ Discuss using the inverse in order to work this out.</li> </ul>	<ul style="list-style-type: none"> <li>• Solve a given problem by collecting and organising data to be displayed in bar charts.</li> </ul> <p>VOCABULARY: Data Information Survey Tally Chart Frequency Table</p> <p>RESOURCES: Activity Sheet 12.1 Clipboards</p>	<p><u>Please note: You will need to liaise with the rest of the teaching staff in your school to complete this lesson.</u></p> <ul style="list-style-type: none"> <li>▪ Pose the children a problem that is related to your class or school – for example, <i>'We are going to sell fruit at break time, but we don't know which fruits to sell'</i>. Perhaps tell the children that the head (or another member of staff) has set this problem and wants to know what they find out – this will set it in a very 'real' context.</li> </ul> <p>Q. How could we set about solving this problem?</p> <ul style="list-style-type: none"> <li>▪ Encourage the children to use what they have learnt in the last two days to help them answer this.</li> <li>▪ Children should recognise that in order to know what to sell, they need to know what people would like, and the best way to find that out is to ask them (or survey them). If needed, lower ability children could have a slightly different problem; <i>'We are going to sell fruit at break time, but we don't know which fruits people like'</i>.</li> </ul> <p>Q. What is the most organised way of asking all the children in the school which fruits they would prefer?</p> <ul style="list-style-type: none"> <li>▪ Encourage children to draw on previous knowledge of surveys and tally charts/frequency table. Ensure that they understand that they would not collect the data using a bar chart.</li> <li>▪ Explain that in groups, they are going to survey different classes about their preference of fruit.</li> <li>▪ Ask the children to contribute the most common fruits to use as categories.</li> </ul> <p>Q. Can they explain why we would not include certain fruits to choose from? E.g. strawberries, pineapple.</p> <p><b>Activity</b></p> <ul style="list-style-type: none"> <li>▪ In groups, children fill in the categories on Activity Sheet 12.1.</li> <li>▪ They then use it to survey their given class.</li> <li>▪ Children return and sit in their groups for plenary.</li> </ul>	<p>Q. If each group now has data about the individual classes, how will we get the data for the whole school? Show the children an enlarged version of Activity Sheet 12.1 Ask each group to read out their results for each category and insert them into the table.</p> <p>Q. How will we find the final results? (add each one together)</p> <p><b>By the end of the lesson children should be able to:</b> Apply knowledge of previous and current data handling to a problem. Explain how they will collect and organise data in order to solve a problem.</p>	

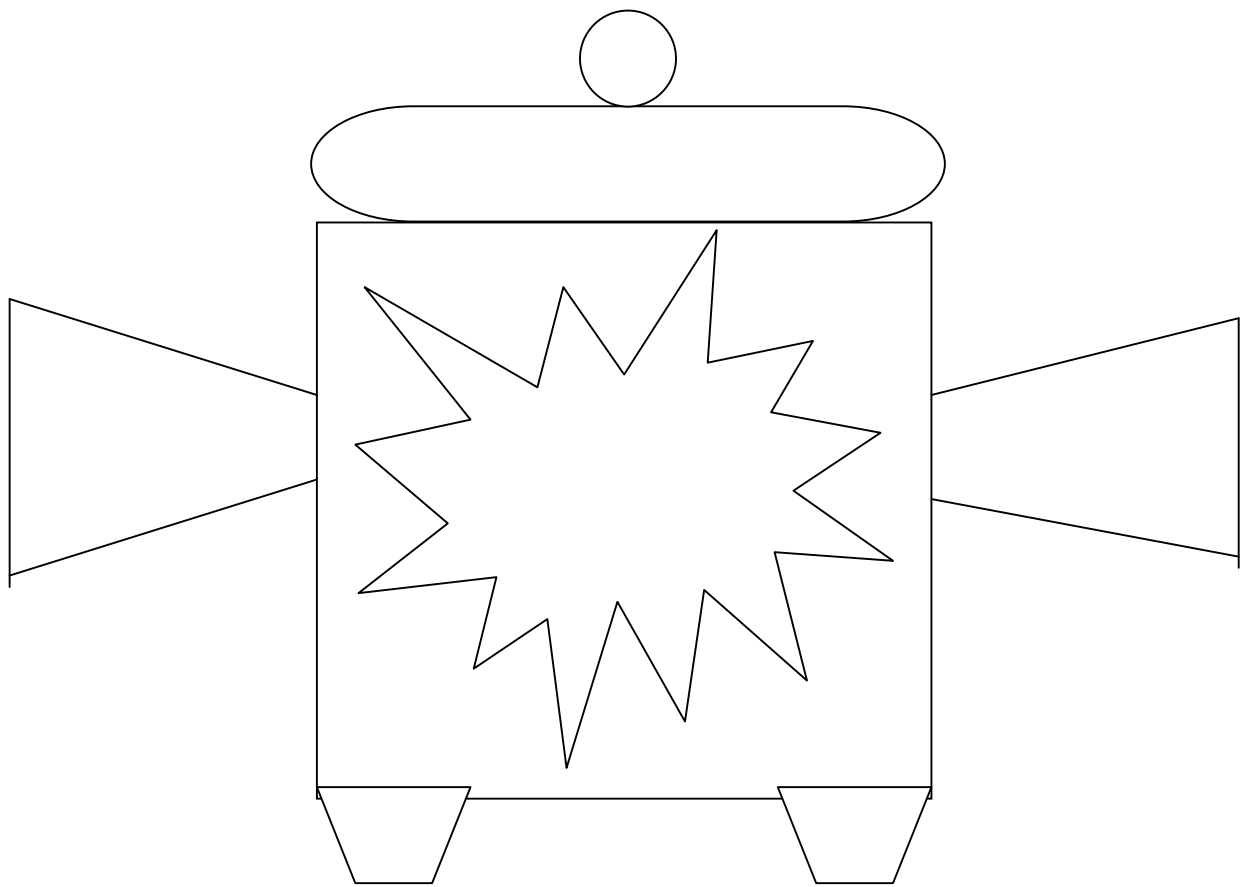
Planning sheet	Day Four	Unit 12 Handling Data	Term: <i>Spring</i>	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
<p>Recall multiplication facts in x2, x5, x10 tables.</p> <p>VOCABULARY:</p> <p>RESOURCES:</p>	<p>Explain to the children that we are going to create a rhythm to help us count in twos. Children gently slap their thighs, followed by a clap, then click their fingers on one hand, then the other. All children should end up with a steady rhythm of ‘thigh, clap, click, click; thigh, clap, click, click ...’ (Children who cannot click can do a little wave). Once they have established this rhythm, they can begin to count in twos. Each number is said on the ‘click, click’ so the children have the ‘thigh, clap’ as thinking time, e.g: ‘thigh, clap, click, click (2) thigh, clap, click, click (4) ...’ Repeat this counting in fives and then tens.</p>	<ul style="list-style-type: none"> <li>Solve a given problem by organising data in bar charts – intervals labelled in ones then twos.</li> </ul> <p>VOCABULARY: Bar chart Axes Data/information</p> <p>RESOURCES: Large squared paper ITP – Bar Charts</p>	<ul style="list-style-type: none"> <li>Recap on the problem posed yesterday. Display the results that we found yesterday.</li> </ul> <p>Q. How can we display these results on a poster for the headteacher? Explain that we need to make it visually very easy to see the most popular fruits so that the head can make a quick decision.</p> <ul style="list-style-type: none"> <li>Once the children have decided on a bar chart, ask them how they will go about creating it.</li> <li>Model drawing the axes of the bar chart (if possible on large squared paper).</li> </ul> <p>Q. How will we know how long our axes need to be? Q. What title will we give our bar chart? Q. What will our labels be?</p> <ul style="list-style-type: none"> <li>Emphasise that if they are using squared paper, then it is very useful to draw your lines on top of the lines already there, and to use the squares to help you draw out your intervals.</li> <li>Model drawing in ‘bars’ for the first two results.</li> </ul> <p><b>Activity</b> Give out copies of the whole school results. All children to draw a bar chart of the whole school results. <i>Lower ability</i> – to draw a bar chart with intervals of 1. Some lower ability children may need the axes drawn for them already. <i>Middle ability</i> – to draw a bar chart with intervals of 2. <i>Higher ability</i> – to draw a bar chart with intervals of 2, and then consider the differences if they had drawn it with intervals of 5. If possible they can sketch out the 5 interval bar chart and decide which would be best for our particular purpose.</p>	<p>Show the children the Bar Chart ITP. Ask children for their information to insert in order to make a bar chart with intervals of 1. Display the bar chart.</p> <p>Q. Ask the lower ability if their bar chart looks the same. Q. Ask the rest of the class how their bar chart is different. Change the ITP bar chart to intervals of 2 – how do they differ?</p> <p>Ensure children notice that the intervals on the side axis have changed. Explain that some children have been looking at bar charts with intervals of 5. Q. Can we say what the differences would be in that bar chart before we see it? Display the bar chart and discuss the similarities and differences. Q. Out of the three bar charts that we have looked at, which shall we decide on to present to the head? Why?</p> <p><b>By the end of the lesson children should be able to:</b> Organise data into bar charts – intervals labelled in ones or twos.</p>

<b>Planning sheet</b>	<b>Day Five</b>	<b>Unit 6 Reasoning about shapes</b>	<b>Term: Autumn</b>	<b>Year Group: 3</b>
<b>Oral and Mental</b>		<b>Main Teaching</b>		<b>Plenary</b>
<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Objectives and Vocabulary</b>	<b>Teaching Activities</b>	<b>Teaching Activities/ Focus Questions</b>
<p>Recall multiplication facts in x2, x5, x10 tables and derive division facts.</p> <p>VOCABULARY: Multiply Divide Inverse</p> <p>RESOURCES: Resource sheet 12  Number fans</p>	<ul style="list-style-type: none"> <li>▪ Remind the children of the function machine used earlier in the week.</li> <li>▪ Show them a function machine with 'x2' in the centre.</li> <li>▪ As Day 3, put the number in and ask the children to show the answer with their number fans.</li> <li>▪ Repeat this with 'x5' and 'x10' as a starter.</li> <li>▪ Now write in the number that comes out of the machine and ask the children to find the number that went in.</li> <li>▪ Talk about the inverse, and how they are actually doing division to find that number.</li> <li>▪ Repeat with 'x5' and 'x10' functions.</li> </ul>	<ul style="list-style-type: none"> <li>• Solve a given problem by organising and interpreting data in bar charts – intervals labelled in ones then twos.</li> </ul> <p>VOCABULARY: How many More Less Most Least</p> <p>RESOURCES: ITP – bar chart Large paper</p>	<ul style="list-style-type: none"> <li>▪ Look together at the bar chart that you created on Day Four (on ITP). Begin by asking simple questions; Q. What information is most obvious? (most/least) Q. How many children like .....? Q. Do more children like ..... or .....? Q. How many more? And so on .....</li> <li>▪ Ask the children to pair up. One child must imagine that they are the headteacher.</li> <li>Q. What kinds of things will the head want to know from your survey?</li> <li>▪ In pairs the child playing the head must quiz the other child about their findings, making up questions of their own. Give them five minutes to do this and then ask them to swap roles.</li> <li>▪ Bring the children back together and make a list of questions that the headteacher may ask, or things they will need to know.</li> </ul> <p><b>Activity</b> To record a conclusion to the problem given on Day Three: either in the form of answered questions or a poster. <i>Higher ability</i> – to produce a poster independently that will present the findings of the survey. Ensure that they include their bar graph, and then write each finding that will help the head to make their decision (using the list on board). <i>Middle ability</i> – to produce a poster as higher ability, although working in pairs for support. <i>Lower ability</i> – Can work in poster form, although provide simple questions that they can answer, e.g. most/least, how many more/less than, how many altogether, etc.</p>	<p>Choose a few children as good examples to present their findings to the class (if possible, the headteacher!). Encourage the child or children speaking to back up all their comments with evidence from their graph. Encourage all children listening to ask questions and query things that are said.</p> <p><b>By the end of the lesson children should be able to:</b></p> <p>Use the data in a bar chart to solve a given problem in a certain format.</p>



**IN**

**OUT**



Question:

	Tally	Total