Unit 13

Five daily lessons

Handling Data

Year 3
Autumn term

This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

Unit Objectives

Year 3

- Solve a given problem by organising and interpreting data in frequency tables and in pictograms with the symbol representing two units. (page 93)

Year 2

- Solve a problem by sorting, classifying and organising information in a list or simple table. Discuss and explain results.

Year 4

- Solve a given problem by collecting, classifying, representing and interpreting data in tally charts, frequency tables, pictograms (symbols) representing 2, 5, 10 units. Include use of computer.

(Key objectives in bold)

Resources needed to teach this unit:

Resource Sheets 13.1, 13.2, 13.3, 13.4
Activity Sheets 13.1, 13.2
Scrap paper
Packs of playing cards (1/2 pack between two children)
Large dice
Whiteboards and pens
Two large 0-9 dice
Scissors
Selection of balls (at least 4 different types)
Clipboards
Number fans
Paper

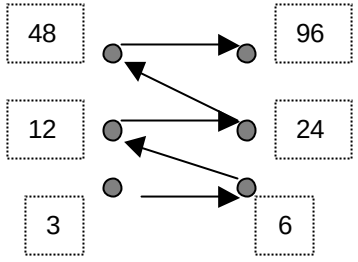
North Somerset Council

Planning sheet	**Day One**	**Unit 13 Handling Data**	**Term: Autumn**	**Year Group: 3**

Oral and Mental		**Main Teaching**		**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
Recognise odd and even numbers to 100.	✍Children to count forward in unison in steps of 1 from any number given (eg. 27, 28, 29, 30……) ✍Ask the children to gently slap their thighs (or clap their hands) between each number in order to keep a steady beat. ✍Tell the children that when they are counting, they should put their hands up if the number is odd and their hands down if the number is even. ✍Repeat this several times, starting from different numbers and also counting backwards in 1's. Q. What pattern did you notice with the odds and evens? ✍Now repeat the same activity but count forwards and backwards in 10's, then 2's, then 5's. ✍Each time ask the children to explain any odd/even patterns that they spot. Q. Can they predict any odd/even patterns before they start a counting sequence?	To be able to organise and interpret data in frequency tables. **<u>Resources</u>** Resource Sheet 13.1 Activity Sheet 13.1 Scrap paper Packs of playing cards (1/2 pack between two children) Large dice Whiteboards and pens	Q. What is a survey? Q. Why might someone need to conduct a survey? Q. How could someone collect the answers to a survey? (Discuss the positive and negative aspects of each suggestion) ✍Encourage suggestions of voting/tallies etc. ✍Display the blank frequency table (Resource Sheet 13.1) and use the left-hand column to list five book titles/TV programmes/foods etc. ✍Explain that you are going to use this to record the answers to your survey. Q. What question am I going to ask you in order to record the answer on this frequency table? (What is your favourite……?) ✍Give out slips of scrap paper as 'voting slips' and explain that this will help them to choose without the influence of others. ✍Collect the slips in and demonstrate how to keep a tally whilst a child calls out each vote. Q. What do you think the 'total' box is for? ✍Ask children to work out the totals. Q. Which is the favourite …… in our class? Q. Which is the least favourite …… in our class? Q. How many more votes did …… get than ……? ✍Encourage children to ask and answer questions about the data. **<u>Activity</u>** Children work in pairs with half a pack of mixed playing cards. They must turn over the cards and complete the frequency table (Activity Sheet 13.1) for the suits they have. Extension – each partner to ask the other questions about the data they have recorded.	Use a large dice and ask children to take turns to throw it. Ask children to record the number that the dice landed on for each throw on the blank frequency table (Resource Sheet 13.1). Look at the completed frequency table. Q. How could we work out how many times we threw the dice? Ask the children to work this out. Produce your own completed frequency table (your chosen topic and numbers filled in on a blank table). Q. Can you use your white boards to work out how many children voted in this survey? **By the end of the lesson children should be able to:** Collect data to create a frequency table. Interpret the data within the frequency table.

Planning sheet	Day Two	Unit 13 Handling Data		Term: Autumn	Year Group: 3
Oral and Mental		**Main Teaching**			**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**		**Teaching Activities/ Focus Questions**
Recognise odd and even numbers to 100. **Resources** Two large 0-9 dice	✍Split the class in to two teams. ✍Decide who is the 'odd' team and who is the 'even' team. ✍Each child in the team takes turns to throw a large 0-9 dice. ✍If the number is odd, the odd team write the number up as their score, if it is even, the even team writes it as their score. ✍Both teams keep running totals of their scores – the first to 100 is the winner. ✍Repeat this game with two 0-9 dice. The children have to add both numbers up and then decide if the answer is odd or even, before adding it to a score.	To be able to interpret data in pictograms, where the symbol represents two units. **Resources** Resource Sheets 13.2, 13.3, 13.4 Activity Sheet 13.2 Scissors Selection of balls (at least 4 different types)	✍Introduce a one unit = one picture pictogram (Resource Sheet 13.2). Q. Why do you think it is called a pictogram? Q. How many people liked red best? Q. How many people liked blue best? ✍Ensure children can interpret data from this type of pictogram. ✍Show children the two unit = one picture blank pictogram (Resource Sheet 13.3 enlarged). ✍Show children the pictures of faces and explain that one face will = two children. Write this up as a key. ✍Ask children to vote for the first food choice by raising their hands. ✍Physically stick each face on for each two children with their hands up. ✍Repeat this for the other foods. ✍When you come to a number of children with one left over, ask them what they think you ought to do to record this. ✍Demonstrate physically cutting a face in half to show that if a whole face is two children then half equals one child. Q. What is the difference between this pictogram and the last one we saw? (This has half pictures and a key) ✍Ask the children questions about the data in the pictogram, including how many/most/least/how many more/less etc. **Activity** Children to complete a pictogram from data and to answer questions that interpret the data in the pictogram (Activity Sheet 13.2).	Show the children a collection of balls (footballs, basketballs, tennis balls, etc). Explain that we want to draw a pictogram for the teacher in charge of PE so that they will know how many balls of each type we have. Draw the outline of a pictogram on the whiteboard and ask the children to tell you the categories. Q. What would be a simple shape to draw to show 2 types of ball? (We must be able to draw half of it easily - circle) Ask some children to count the balls and other children to come and draw the pictures in. When finished ask the children to total how many of each there are, and how many altogether. **By the end of the lesson children should be able to:** Read a pictogram where the symbol represents 2 units and interpret the data. Draw a pictogram where the symbol represents 2 units.

Planning sheet	Day Three	Unit 13 Handling Data	Term: Autumn	Year Group: 3

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
Derive doubles of whole numbers to 20.	✍ Use fingers to show doubling numbers to 10. ✍ Hold up a certain amount of fingers on one hand (eg. 3) and then hold up the same amount of fingers on the other hand to show that this doubles the number (eg. 6). ✍ Give the children a number, they make it using the fingers on one hand the double it using both hands and hold their hands up to show the answer. ✍ Split the class into two teams, ideally in two lines facing each other. ✍ Questions and answers will 'bounce' across from one team to the other. ✍ Start with the first child in one team deciding on a number below 5. ✍ The child opposite, in the other team, responds with the doubled answer. The next child in the opposite team then doubles that number, and so on.  	✍ Solve a given problem by organising and interpreting data in frequency tables and in pictograms with the symbol representing two units. **Resources** Activity Sheet 13.1 Clipboards	*Please note: You will need to liase with the rest of the teaching staff in your school to complete this lesson.* ✍ Explain to the children that they are going to use their new data collection skills to solve a problem. ✍ Tell the children that the staff/head teacher needs to know how each child got to school that morning. ✍ *N.B. If possible choose a problem that is more relevant to your class – if the children can see a reason for solving the problem it will become 'real'.* Q. How can we find this out? Q. How can we collect this information? ✍ Ensure children understand the difference between *collecting* the data and *organising* the data. They would not collect the data using a pictogram. ✍ Establish that a quick way of collecting this data would be to use a frequency table to tally votes. Q. Can someone recap for us all how to use a frequency table? Q. What information are we going to collect? Can we decide on headings for the frequency table? ✍ Encourage children to think of 4-6 most common answers for each category. Decide as a class whether to include 'other' as a category. Q. How could we organise ourselves as a class to ensure that we have collected data from every child. ✍ Split the class into groups. Each group is to survey a different class (including own class). **Activity** ✍ All children to fill in the decided categories on their own frequency table (Activity Sheet 13.1) and spend the next 10 minutes collecting data from their allocated class. ✍ Children return and sit in current groups for plenary.	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 'whole school' frequency table (Activity Sheet 13.1). ✍ Ask each group to read out their results for each category and insert into the table. Q. How will we find the final results? (add each one together) Homework Add the data from each class together to get a final result for each category. This must be returned for Day Four. **By the end of the lesson children should be able to:** Collect and organise data into a frequency table.

Planning sheet	Day Four	Unit 13 Handling Data		Term: Autumn	Year Group: 3
Oral and Mental		**Main Teaching**			**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**		**Teaching Activities/ Focus Questions**
Derive halves of whole numbers to 20.	✍Repeat the first activity from Day Three. ✍Hold up the number on two hands first, and then ask the children to hold up one hand with the halved answer. ✍Repeat the second activity from Day Three, halving each answer instead of doubling. ✍To keep the children on track, you could use a ball to throw and catch as the children 'pass' their number on. ✍A variation would be to begin by halving numbers, then bang a drum/blow a whistle etc and the children must change to doubling, using the current number.	✍Solve a given problem by organising and interpreting data in frequency tables and in pictograms with the symbol representing two units.	✍Remind children of the problem set yesterday and ask them to have their homework in front of them. Q. What totals did you have on your frequency table for ……? ✍Ensure all children have the correct totals for each category. Q. Which was most popular? Q. Which was least popular? ✍Tell the children that you felt it took a while to look through the numbers for those answers. Q. Have we learnt another way of organising this data so that we could see most/least popular etc at a glance? (a pictogram) Q. If we were to draw a pictogram of this data, how would we do it? ✍Model drawing the axes of the pictogram and inserting the categories. Q. What picture should we draw to represent the number of children? (keep it simple) Q. Can we draw one picture for each child? ✍Some of the numbers will be fairly large, so use this to emphasise why we will use one picture to represent 2 children/units. **<u>Activity</u>** All children to draw a pictogram using the data collected yesterday. Each pictogram must show one symbol representing 2 units. *Lower ability* children could have the axes and categories already completed for them so they only need to insert the symbols. *Higher ability* children could investigate how the pictogram would look different if we used one symbol to represent 5 units instead of 2.	Investigate how the pictogram would look different if the symbols represented other units. Q. Why did we decide not to use 1 symbol=1 unit? Q. What would the pictogram look like if we used 1 symbol = 4 units/5 units/10 units? Q. Can you give a reason why using 1 symbol = 2 units was the best for our pictogram? Q. Do you think anything else would have been better (eg. 1 symbol = 5 units)? Why? **By the end of the lesson children should be able to:** Organise data in a pictogram where the symbol represents two units.

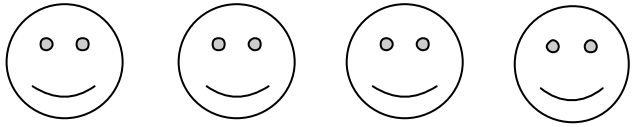
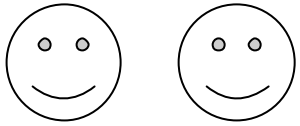
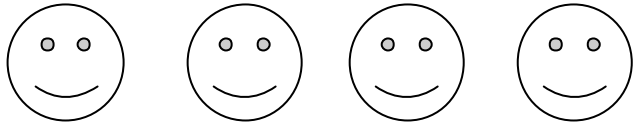
Planning sheet	Day Five	Unit 13 Handling Data	Term: Autumn	Year Group: 3

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
Say the number that is 10/100 more/less than any two- or three-digit number. **Resources** Number fans Paper	✍Play a 'Show Me' game using number fans. ✍Tell children that you will be finding numbers that are '10 more' to begin with. ✍Show the children a two or three digit number and count '3…2…1…show me' before the children hold up their answers. Repeat with other numbers. ✍Repeat this activity with '10 less', '100 more' or '100 less'. ✍Stick a sign on each wall of the classroom – 10 more/10less/ 100 more/100 less. ✍Write a two or three digit number on the whiteboard. ✍Then show a number to the children with your number fan. ✍The children must touch the wall with the sign that they think corresponds (eg. if 132 is on the white board and you show 232 on the number fan, The children should touch the wall with the '100 more' sign. ✍Make it more difficult by introducing numbers that are not any of these four, so the children must stay in the centre of the room.	✍Solve a given problem by organising and interpreting data in frequency tables and in pictograms with the symbol representing two units.	✍Ask children to look at the pictograms that they created on Day Four. Q. What information do you notice immediately as you look at your pictogram? (eg. most/least) Q. Can you suggest other information we could gain from this pictogram? Q. How many children ……? Q. Do more children do ……. or……? Q. How many more ……? And so on …… **Activity** To record a conclusion to the problem given on Day Three: either in the form of answered questions or in the form of a report. *Higher ability* – to produce a report to the head teacher that explains how healthy the school is in terms of getting to school. Ensure they begin to report *why* certain amounts of children walk/ride/come by car etc. Can they suggest any actions to come from this survey, e.g. a large amount of children come by car for certain reasons so the school may need a safer parking area, etc. Obviously, adapt this if different data was collected. *Middle ability* – To interpret the data through answering your own questions. Include questions that ask about most/least; more than/less than; how many more/less; how many altogether; comparisons; how could we collect more accurate data? *Lower ability* - To interpret the data through answering your own questions. Include questions that ask about most/least; how many in a particular category; more than/less than; how many altogether.	Ask questions that encourage the children to challenge the findings of the graph. Q. Does this tell us accurate data for every day of the year and every person in the school? Q. How would the graph be different: If it were a wet day? If it were June/August? If it were a Saturday? If there were no buses? If we only asked Year 6? If we lived in a city/the country? If we asked the staff? **By the end of the lesson children should be able to:** Solve a given problem by interpreting data in a pictogram.

	Tally	Total

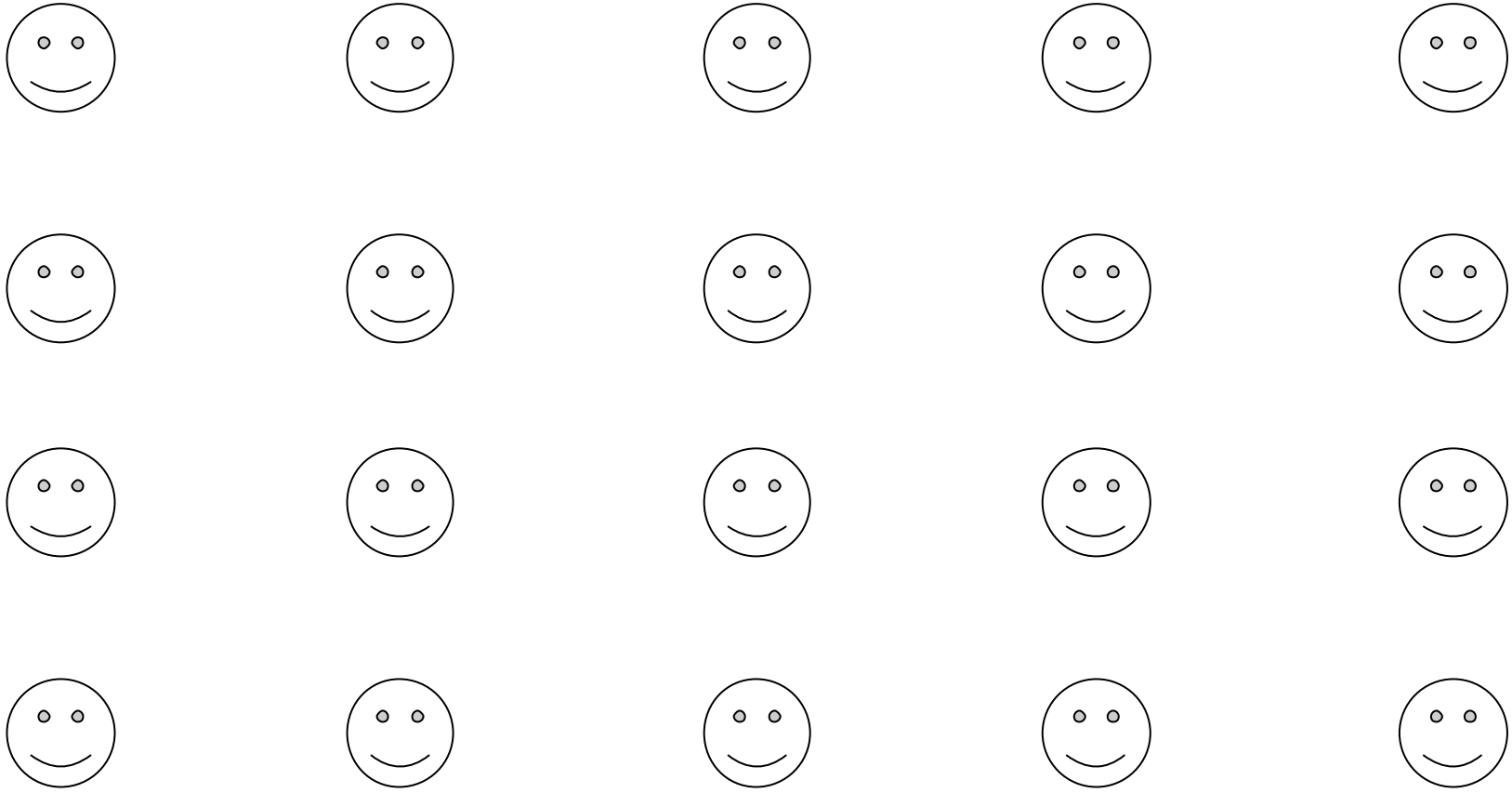
Resource Sheet 13.2 **Year 3 Autumn Term**

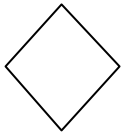
Class 3's favourite colours

Red	
Blue	
Green	
Yellow	
Purple	
Brown	

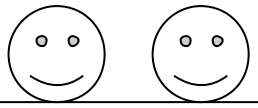
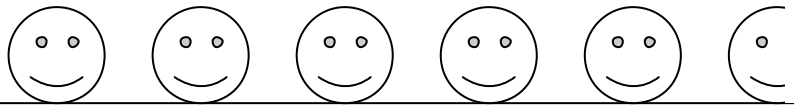
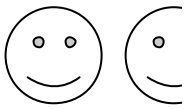
Our favourite food

Pizza	
Spaghetti Bolognaise	
Chips	
Chicken	
Ice Cream	
Chocolate	



Suits of Cards	Tally	Total
Hearts 		
Clubs 		
Diamonds 		
Spades 		

Class 3's favourite ice creams

vanilla	
chocolate	
strawberry	
mint	
toffee	
lemon	

Key  **= 2 children**

1. The pictogram is not finished.
Five children voted for lemon flavour ice cream as their favourite.
Can you complete the pictogram?

2. How many people voted for strawberry as their favourite?

3. How many people voted for toffee as their favourite?

4. Which was the most popular flavour?
How many people voted for it?

5. Which was the least popular flavour?
How many people voted for it?

6. How many people voted altogether?