National **Numeracy** *Strategy*

Unit 8
Handling data

Year 5
Spring term

Unit Objectives
Year 5

- Solve a problem by representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer, for example:
bar line charts, vertical axis labelled in 2s, 5s, 10s or 100s, first where intermediate points have no meaning (e.g. scores on a dice rolled 50 times), then where they may have meaning (e.g. room temperature over time).

Supplement of Examples

Pages 115, 117

This Unit Plan is designed to guide your teaching.

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

Resources needed to teach this unit:

- Resource sheet 8.1
- OHT 8.1
- OHT 8.2
- OHT 8.3
- 1-6 dice
- Interactive teaching program: Handling Data from NNS website: www.numeracy.org.uk
- Rulers
- Whiteboards
- Squared paper
- Counting stick

Link Objectives

Year 4

- Solve a problem by collecting quickly, organising, representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer, for example:
tally charts and frequency tables;
pictograms – symbol representing 2, 5, 10 or 20 units;
bar charts – intervals labelled in 2s, 5s, 10s or 20s;
Venn and Carroll diagrams (two criteria).

Year 6

- **Solve a problem** by representing, **extracting and interpreting data in tables, graphs, charts** and diagrams, including those generated by a computer, for example:
line graphs (e.g. for distance/time, for a multiplication table, a conversion graph, a graph of pairs of numbers adding to 8);
frequency tables and bar charts with grouped discrete data (e.g. test marks 0-5, 6-10, 11-15…).

(Key objectives in bold)

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Planning sheet	Day One (page 1 of 2)	Unit 8 *Handling data*		Term: *Spring*	Year Group: *5*
Oral and Mental		**Main Teaching**			**Plenary**
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities		Teaching Activities/Focus Questions

Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
Read and write whole numbers and know what each digit represents.	• Write 347 256 on the board and ask a child to read it. Indicate one of the digits and ask for its value, (e.g. the value of the 4 is 40 000). Repeat with other digits. • Ask children to add 40 000 to 347 256 and write the answer on their whiteboards. Repeat, asking children to add or subtract different amounts to the last number on their whiteboards, e.g. add 300 (to 387 256), subtract 100 000 (from 387 556), add 4 (to 287 556), subtract 50 (from 287 560) etc.	Solve a problem by representing and interpreting data in tally charts, and bar charts.	• Show the class a large dice with the faces numbered 1 to 6. Q Which number is the most likely to turn up when this dice is rolled? Discuss children's answers and agree that as the dice is fair then the numbers are equally likely. • Explain to the class that you will roll the dice and as you do, they are to sum the numbers you get until you get 20 or more. Before you do ask: Q How many times must we roll the dice so that we get a total of 20 or more? Collect children's suggestions and record them on the board. Roll the dice and have the children total the numbers, keep track of the number of rolls needed to get a score of 20. Repeat the experiment a few times, and record the results on the board. • Compare the number of rolls taken with the children's predictions. Ask: Q Is it possible to predict the number of rolls needed to get a total of 20 or more? Discuss the behaviour of the numbers on the dice, the way they occur and how these cannot be predicted so neither can the total. Explain that the occurrence of the numbers is random. Q Suppose we put the number 3 on each face, could we predict how many rolls we would need to get a total of 20 or more? Establish that it would require 7 rolls. This time we can predict the numbers that occur, as the numbers we get are not random but are always 3s. • Say that this time the total is 24 or more and ordinary dice are to be used so the numbers 1 to 6 will occur at random. Q What could the greatest number of rolls be to get a score of 24 or more? What could the fewest number of rolls be? Collect answers and establish that it could take 24 rolls, getting a 1 each time, or just 4 rolls with a 6 each time. Give out the dice and ask the children to work in pairs, and conduct the experiment 10 times. Each time the pair is to record the number of rolls they needed to get a score of 24 or more. • When the children have completed their experiments ask: Q Did anyone get a 24 in exactly 24 rolls or in exactly 4 rolls? Say that you want to record the results of the whole class and represent them on a chart. Q How can we collect and display the class's results?	• Remind children that the totals in the final column are called the frequencies of the rolls taken. Discuss the results in the tables, and ensure children use the term frequency correctly. Q Which number of rolls was the most frequent? Which was the least frequent? Encourage children to identify the proportions from the table, such as: more than half the time these rolls were needed; less than a quarter of the time… etc. • Turn the OHT round so that the column with 4, 5, …, 24 is along the bottom. Remind children how this data can be represented as a bar chart with the numbers on the horizontal axis the number of rolls 4, 5 etc and the numbers on the vertical axis the frequencies. Q What scale on the vertical axis do we need to draw this bar chart? Discuss the scale and give out squared paper for children to draw the bar chart for homework. Remind the children that we can only take a whole number of rolls so we leave a gap between the bars when we draw this chart.
VOCABULARY place value digit RESOURCES Whiteboards		VOCABULARY frequency random horizontal axis vertical axis tally chart bar chart equally likely RESOURCES OHT 8.1 Squared paper 1-6 dice		

NNS Unit Plans

Planning sheet	Day One (page 2 of 2)	Unit 8 *Handling data*	Term: *Spring*	Year Group: *5*
Oral and Mental		**Main Teaching**		**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**

| | | | Draw children towards use of tally charts and bar charts. Discuss methods and demonstrate how to record tallies for some of the data. In groups of 8 to 10 children set them the task of collecting all their experimental results using tallies and counting up the different numbers of rolls taken. Discuss the results of the different groups and establish that it is possible to take between 4 and 24 rolls.

• Show OHT 8.1. Explain that you are going to write the results from each group in the middle column to collect the class's results. When all the results have been collected get the children to record the totals for each of the number of rolls 4 to 24. With the class, complete the totals column and the Grand Total box at the end. | **By the end of the lesson the children should be able to:**

• **Test a hypothesis from a simple experiment;**
• **Discuss a bar chart showing the frequency of the event;**
• **Discuss questions such as: 'Which number was rolled most often?'.**

(Refer to supplement of examples, section 6, page 115.) |

Planning sheet	Day Two (page 1 of 2)	Unit 8 *Handling data*		Term: *Spring*	Year Group: *5*
Oral and Mental		**Main Teaching**			**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**		**Teaching Activities/Focus Questions**
Order a set of positive and negative integers. VOCABULARY positive negative minus RESOURCES Whiteboards	• Ask six children to each say a negative number between –20 and 0. Record them randomly on the board with a space between each. Ask six other children to each say a positive number between 0 and 20. Record them amongst the negative numbers. • Use a number line drawn on the board. Label the positions –20, 0 and 20. Ask a child to indicate the position of –10. Repeat with other numbers to confirm children can identify key markers. • Ask children to write the 12 numbers in order on their whiteboards, starting with the lowest, using the number line for reference. • Collect answers. • Give children other sets of positive and negative numbers to put in order.	Solve a problem by representing and interpreting data in bar line charts where intermediate points have no meaning, including those generated by a computer. VOCABULARY likely/unlikely most/least likely sequence bar line chart horizontal/ vertical axis terms RESOURCES 1-6 dice Computer graphing software, NNS Data Handling OHT 8.1 Squared paper	• Review the homework and discuss the shape of the bar chart. Establish that rolling 24 1s is very unlikely. Decide which numbers of rolls of the dice appear to be the most and least likely. • Explain that you want the class to do some more experiments using dice to solve a problem. Write the sequence 2, 3, 5 on the board and establish the numbers are increasing. Add 1 to the sequence and explain that at this point the sequence has started to decrease so it stops. There are 4 numbers or terms in this sequence. Q Can you give me other sequences that increase then stop when they start to decrease? Record some on the board e.g. 3, 3, 5, 6, 1 together with the length of the sequence, in this case 5. Establish that repeats are allowed but once the number decreases it stops. • Explain that the children are going to generate sequences like this using dice. With the class use dice to generate some sequences, ensuring children understand the stopping rule. Q What is the shortest sequence we could have? Ensure children recognise these might only have 2 terms and ask them for examples e.g. 6, 1; 4, 2. Q What is the longest sequence we could have? Establish the sequence could be very long if we keep getting repeats. Ask for examples such as 1, 1, 2, 2, 2, … . • Tell the children that you read in a book that 'more than half the time the sequences will have 4 or less terms'. Write this on the board. Q Do you think this is true? Collect their ideas and get a class view. Give out dice and ask every child to generate 20 sequences using the stopping rule 'when it decreases stop'. They are to list their sequences and the length of their sequences. • Organise the class into groups of 5 children and get them to poll their results, using tallies for the lengths of the sequences. When they have polled their results ask: Q What was the longest sequence in your group? Record this sequence on the board to confirm it is correct. Q Do the results in your group suggest that the statement on the board is true or not? Have your views changed? Discuss the results and the children's views.		• Discuss the bar line chart the children have drawn. Q Is it similar in shape to the bar chart you drew for homework? Identify any similarities and differences. • Remind children of the number of data items altogether in the grand total. Q Were there 4 or less terms in our sequences in more than half our data items? Use the table or chart to find out the number of times there were 4 or less terms in the sequences. Q Is this more than half of our data? Do we think the claim is true or false? • Ask children whether they could frame any other statements about the behaviour of the sequences. Discuss the children's suggestions. **By the end of the lesson the children should be able to:** • **Test a hypothesis about the frequency of an even number by collecting data quickly;** • **Discuss a bar chart or bar line chart and check the prediction.** (Refer to supplement of examples, section 6, page 115.)

Planning sheet		Day Two (page 2 of 2)		Unit 8 *Handling data*	Term: *Spring*	Year Group: *5*
Oral and Mental		**Main Teaching**				**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**			**Teaching Activities/Focus Questions**
			• Say you want to collect and display the results of the whole class. **Q** What table should we use? Confirm the table needs to cover the numbers 2 to the largest number of terms in the longest sequence already written on the board. Agree a table, if necessary refer back to OHT 8.1. Collect the results and total the frequencies. Explain that you want to display it as a bar line chart where the bars become lines. **Q** Will there be gaps between the lines? Establish there will be as you can only have a whole number of terms in a sequence. Give out squared paper for children to draw the bar line chart using the whole-class data set.			

Planning sheet	Day Three (page 1 of 2)	Unit 8 *Handling data*		Term: *Spring*	Year Group: *5*
Oral and Mental		**Main Teaching**			**Plenary**
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities		Teaching Activities/Focus Questions
Recognise which simple fractions are equivalent.	• Write ½, ¾, ¼ on the board. Remind children of the terms numerator and denominator. **Q** Are these fractions in order of size, smallest first? Establish that they are not, and with the class agree their order and record on the board, ¼, ½, ¾. • Ask children for other fractions that are equivalent to ½. Collect answers on the whiteboards and record cases e.g. $^4/_8$, $^5/_{10}$ etc under ½. **Q** Can you describe the relationship between the numerator and the denominator? Encourage children to recognise that the denominator is double the numerator. **Q** If the numerator is 15 what must the denominator be to go in this column of equivalent fractions? Collect answers on whiteboards and repeat, adding the fractions to the list. **Q** If the denominator is 42 what must the numerator be to go in this column of equivalent fractions? Collect answers and add to the list. • Repeat for ¼ and emphasise that the denominator is always four times the numerator. List these fractions under ¼.	• Solve a problem by representing and interpreting data in bar line charts where intermediate points may have meaning. VOCABULARY line graph intermediate points horizontal axis vertical axis RESOURCES Resource sheet 8.1 OHT 8.2 Rulers	• Give the class Resource sheet 8.1. Explain that the first table shows the temperature of a surface exposed to the sun over a period of 24 hours. With the class, discuss the temperatures in the table. **Q** When was the surface hottest, coldest? Ensure the children understand the times, and that the temperatures are measured in degrees Celsius. • Explain that you want to represent the data on a graph. **Q** What units will be on the horizontal and vertical axes? Establish that children can identify the units on each axis. **Q** What numbers should we put on the time axis and the temperature axis? Agree that 0 to 24 must be on the time axis and 0 to 60 on the temperature axis. • Give out squared paper and using OHT 8.2 construct the axes with the class. Explain that the temperatures from the table are to be represented with small crosses. **Q** Where will we place the first cross? Establish that 30.7 is between 30 and 31 and closer to 31. Identify the point on the OHT graph and mark the cross. Invite children to put on the OHT graph crosses that correspond to the next few temperatures to ensure that they are able to interpret the decimal values and identify them correctly on the scaled axes. Ask children to complete their own graphs for the full 24 hours. • Discuss the changes in temperature shown by the crosses on the graph. **Q** What times of the day do you think the temperatures were taken? Encourage children to associate the lowest set of temperatures with the night when the sun was not heating up the surface, and that the 7th, 8th or 9th times are around midnight, while the 19th, 20th and 21st are around midday. **Q** How could we estimate the temperature at 3.5 hours? • Discuss whether there are values between the crosses and their meaning. Get children to join the points up with a ruler demonstrating this on the OHT graph. Use these lines to get an estimate after 3.5 hours, and at other times.		• Collect the children's answers to the questions posed. Explain that while they have joined up the points with straight lines, if we had more detailed measurements the points would more likely form a smooth curve. • Ask children to look at the table on Resource sheet 8.1 that is another set of measurements collected over the same 24 hours. These figures are measurements of the light intensity, the unit of measure is the lux. **Q** Why are there 0s for hours 8 to 12? Collect answers and establish that there was no light so it must have been nighttime. **Q** When was the light strongest? Establish it was at hour 21, this must have been close to midday. • Say that you will return to the table later in the week.
VOCABULARY fraction numerator denominator RESOURCES Whiteboards					

NNS Unit Plans

Planning sheet	Day Three (page 2 of 2)	Unit 8 *Handling data*	Term: *Spring*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**

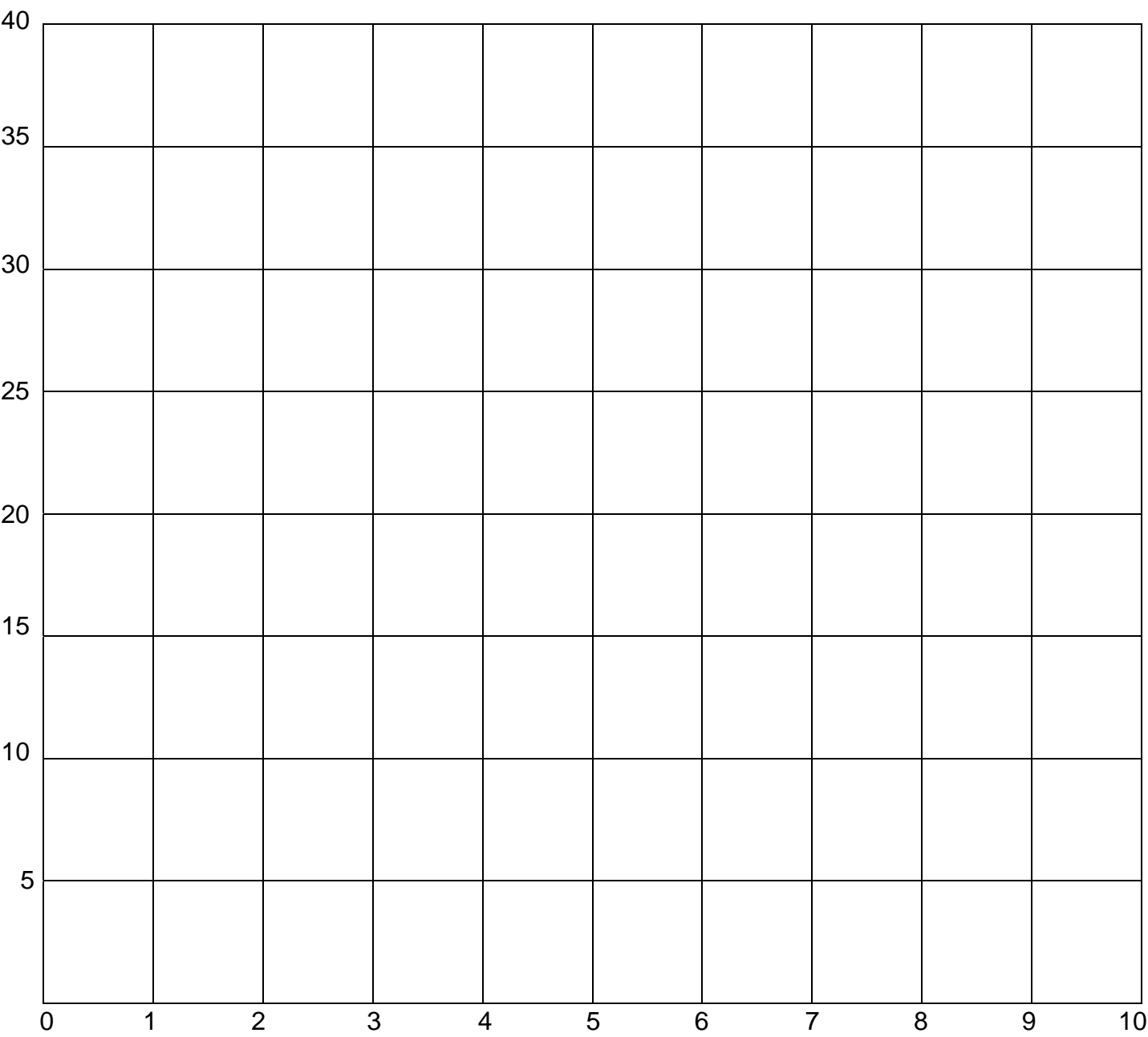| Oral and Mental	Main Teaching	Plenary
• Write $^{15}/_{20}$ under ¾. **Q** Are these fractions equivalent? Why? Encourage children to explain that the numerator and denominator of ¾ have each been multiplied by 5. Collect children's suggestions for other equivalent fractions, each time asking for an explanation to confirm the equivalence to ¾.	**Q** For how long was the temperature greater than 40°C; less than 20°C? Collect suggestions from the children as to how they might answer these questions, and ask children to demonstrate their ideas on the OHT graph. Emphasise that as time and temperature are measures not counts or frequencies, the intermediate points have meaning and we can join up the crosses and use them to answer different questions. • Invite the children to pose questions about the graph for other children to answer.	**By the end of the lesson the children should be able to:** • **Draw and interpret a line graph;** • **Understand that intermediate points may or may not have meaning.** (Refer to supplement of examples, section 6, page 117.)

Planning sheet	Day Four (page 1 of 2)	Unit 8 *Handling data*	Term: *Spring*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**
Add or subtract any pair of two-digit numbers.	• Give any two-digit number, e.g. 37. Ask the class to add another number, e.g. 26 and say the answer together on your signal. Discuss strategies used and record them on the board, e.g. 37 + 26 30 + 7 + 20 + 6 30 + 20 + 7 + 6 50 + 13 53 • Repeat with other pairs and collect other strategies. • Include subtractions involving 9, 19, 29 etc. e.g. 85 − 59 85 − 60 + 1 25 + 1 26 • Extend to subtraction of 8, 18, 28 etc and 11, 21, 31 etc.	Solve a problem by representing and interpreting data in bar line charts where intermediate points have meaning. VOCABULARY line graph intermediate points horizontal/vertical axis axes RESOURCES OHT 8.3 Squared paper Rulers	• Show OHT 8.3. Mark the points (0, 0) and (10, 40) with crosses and join these up with a straight line. Explain that the line graph is to represent a multiplication table. **Q** Which multiplication table does it represent? How did you decide? Establish it represents the 4 times table. Start at (0, 0) and explain that 0 x 4 = 0 and with the class move along the graph getting the class to chant 1 x 4 = 4 to 10 x 4 = 40. • Say that numbers other than whole numbers can be multiplied by 4. **Q** What number is halfway between 2 and 3? Agree it is 2.5. **Q** What is 2.5 x 4? Use the graph to establish 2.5 x 4 = 10. Repeat with other halfway points. **Q** Where is 3.2 on the horizontal axis? Invite children to locate it on the OHT. **Q** How can we use the graph to find 3.2 x 4? Collect answers and get an estimate for the answer from the graph. Say that if the graph was in centimetre squares they could use a ruler to get a better estimate. • Give out centimetre squared paper and centimetre rulers. Explain that you want the class to draw a graph representing the 5 times table. Discuss the axes and agree that the horizontal axes will be 10 cm and that the vertical axis will be 25 cm with each cm representing 2 units. Get the class to draw the line joining (0, 0) to (10, 50). Use the line to work through the 5 times table from 0 x 5 = 0 to 10 x 5 = 50. **Q** How can we use the graph to find 4.5 x 5, 3.6 x 5 etc? Ensure that children can locate 4.5 and 3.6 etc on the horizontal axis using the ruler, and measure up from these values to the line. **Q** Since each cm on the vertical axis represents 2 units, how do we use our measurements to find the answers to 4.5 x 5 and 3.6 x 5 etc? Ensure they understand that they must double the lengths they measure. • Set other multiplications by 5 for the children to work out using the line graph. Collect answers and discuss methods and accuracy.	• Display OHT 8.3 with the line graph representing multiplication by 4. Mark the point (10, 25) with a cross and join it with a straight line to (0, 0). **Q** What multiplication could this line represent? Collect suggestions. Remind the children that as the line graph passes through (10, 25), the multiplication by 10 gives 25. • Write on the board: 10 x ? = 25. **Q** What number multiplied by 10 gives 25? Establish it is 2.5. • Use this line graph to find estimates for 3 x 2.5, 4 x 2.5, 7 x 2.5, 8 x 2.5. **Q** What line graph would you need to draw on our graph to get estimates to calculations involving multiplication by 3.8? Get children to draw the line from (0, 0) to (10, 38).

NNS Unit Plans

Planning sheet	Day Four (page 2 of 2)	Unit 8 *Handling data*	Term: *Spring*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**
			Q What other multiplications can we represent by drawing other lines on our graph? Collect answers. Establish that the 2, 3 and 4 times tables can be represented. Get children to draw the lines that correspond to these tables. **Q** How can we use these graphs to find 4.5 x 2, 4.5 x 3, 4.5 x 4, 4.5 x 5? Collect suggestions. Remind children that when they measure the distance to the lines they must double the distance in cm as each cm represents 2 units. • Set other multiplications for children to estimate. Collect and discuss answers.	**Q** Can you find estimates from your graph to 5 x 3.8, 3 x 3.8, 7.5 x 3.8? • Discuss the strategies the children used. Encourage them to give an approximation for each e.g. 5 x 3.8 is approximate 5 x 4 = 20. • Write the exact answers on the board: 5 x 3.8 = 19.0; 3 x 3.8 = 11.4; 7.5 x 3.8 = 28.5. Compare the children's estimates to these answers and discuss the limitations of the graph method. **By the end of the lesson the children should be able to:** • **Draw and interpret a line graph where intermediate points have meaning.** (Refer to supplement of examples, section 6, page 117.)

Planning sheet	Day Five (page 1 of 2)	Unit 8 *Handling data*	Term: *Spring*	Year Group: *5*

Oral and Mental		**Main Teaching**		**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
Recall the facts in the times 7, 8 and 9 times tables. Begin to derive corresponding division facts.	• Ask children to count in 7s to 70, indicating positions on the counting stick as they do so. Indicate points on the stick at random and ask for x7 facts. Give a signal for the class to say the answer together. Repeat, counting in 8s to 80 and 9s to 90 and asking for related x8 and x9 facts. • Return to the counting stick, and count forwards in 7s to 70, then count backwards to 0. Repeat but stop at certain points e.g. 42 and ask: **Q** What is 42 ÷ 7? Encourage children to use those patterns and markers on the stick to give answers. • Repeat using the stick with 8s and 9s.	Solve a problem by representing and interpreting data in bar line charts where intermediate points have meaning. VOCABULARY axes scale round to nearest 1000 line graph intermediate value RESOURCES Resource sheet 8.1 Squared paper Rulers Counting stick	• Refer children back to Resource sheet 8.1 and their line graph of the temperatures that they drew for the first table. Say that you want them to draw the line graph for the light intensity in the second table. Discuss the table of values. Say you want to see what the relationship is between the two sets of data. • Agree the axes for the graph. Establish that time will go on the horizontal axis with values 0 to 24. Give out squared paper. **Q** What numbers need to be covered by the vertical axis? Establish this must cover numbers from 0 to 67 569. **Q** How can we scale the axis to deal with such big numbers? Collect suggestions. **Q** How many squares would we need if we had 1 square for every 1000 lux? Establish that this would require over 67 squares, too many squares. **Q** Would it be possible to have 1 square for every 2000 lux? Agree the number of squares needed and compare this to 1 square for every 5000 lux. • Emphasise to the children how important it is to spend time thinking carefully about the scales that are to be used, and agree to try 1 square for every 5000 lux. Have the class count up in 5000s from 0 to 70 000, keeping tally on the counting stick. **Q** How many squares do we need for our axis? Get the children to repeat the count in 5000s in unison, moving up the axis from 0 to establish the number of squares needed. Ask children to record these numbers on their axis. • Return to the table. **Q** What was the lux value at 0 hours? Establish this is 1932. **Q** What is the number rounded to the nearest 1000? Confirm it is 2000. **Q** Where does 2000 appear on our axis? Use the counting stick to model the vertical axis and identify that 2000 appears between 0 and 5000 but is closer to 0. Get children to draw a cross on the graph at a suitable point. Repeat for other values in the table.	• Discuss children's responses to the questions and clarify any misunderstanding. • Ask for suggestions for other data which could be displayed in a line graph where intermediate points may or may not have meaning. • Ask children to look at their earlier graphs of the temperatures. **Q** Do the two graphs show a similar pattern over the 24 hours? Confirm the relationship between the two graphs: bright sun, hot surface; no sun, cool surface. • Remind children that the data in the two tables were measurements taken over time so that the intermediate values had meaning and we could join up the points as we did.
RESOURCES Counting stick Whiteboards				

Planning sheet	Day Five (page 2 of 2)	Unit 8 *Handling data*	Term: *Spring*	Year Group: *5*
Oral and Mental		**Main Teaching**		**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**

Main Teaching — Teaching Activities

- When finished ask:

Q Do the intermediate points have any meaning?

Agree they do. Ask children to join up the points with a ruler.

- Discuss the shape of the line graph with the children. Encourage them to tell the story of the 24 hours.

Q Was it a sunny or cloudy day?

Q When did the sun rise and set?

Q Were the 24 hours in summer time or winter time?

Collect answers.

Plenary — Teaching Activities/ Focus Questions

By the end of the lesson the children should be able to:
- **Solve a problem by interpreting data in line graphs;**
- **Draw and interpret a line graph. Understand that intermediate points may or may not have meaning.**

(Refer to supplement of examples, section 6, pages 115 and 117.)

Rolls	Results of Each Group	Totals
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
	Grand Total	

40

35

30

25

20

15

10

5

0   1   2   3   4   5   6   7   8   9   10

Temperature

Time (hours)	0	1	2	3	4	5	6	7	8	9	10	11	12
Temperature (°C)	30.7	27.7	26.5	24.1	21.4	19.5	18.2	17.4	16.8	15.7	14.6	14.2	13.7
Time (hours)	13	14	15	16	17	18	19	20	21	22	23	24	
Temperature (°C)	13.3	13.6	16.7	29.8	40.4	46.6	54.6	58.6	55.1	53.9	42.0	39.4	

Light Intensity

Time (hours)	0	1	2	3	4	5	6	7	8	9	10	11	12
Light (lux)	1932	9207	11312	5487	2668	1240	75	38	0	0	0	0	0
Time (hours)	13	14	15	16	17	18	19	20	21	22	23	24	
Light (lux)	263	1954	4397	8455	13641	29162	47263	63886	67569	56670	22322	39534	