Unit 6b
Handling data 2

Three daily lessons

Year 5
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 5

- Solve a problem by representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer.   Pages 115, 117

- Find the mode of a set of data.   Page 117
- Develop calculator skills and use a calculator effectively.   Page 71

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.

Year 6

- **Solve a problem** by representing, **extracting and interpreting data in tables, graphs, charts** and diagrams, including those generated by a computer.

- Find the mode and range of a set of data.

- Develop calculator skills and use a calculator effectively.

(Key objectives in bold)

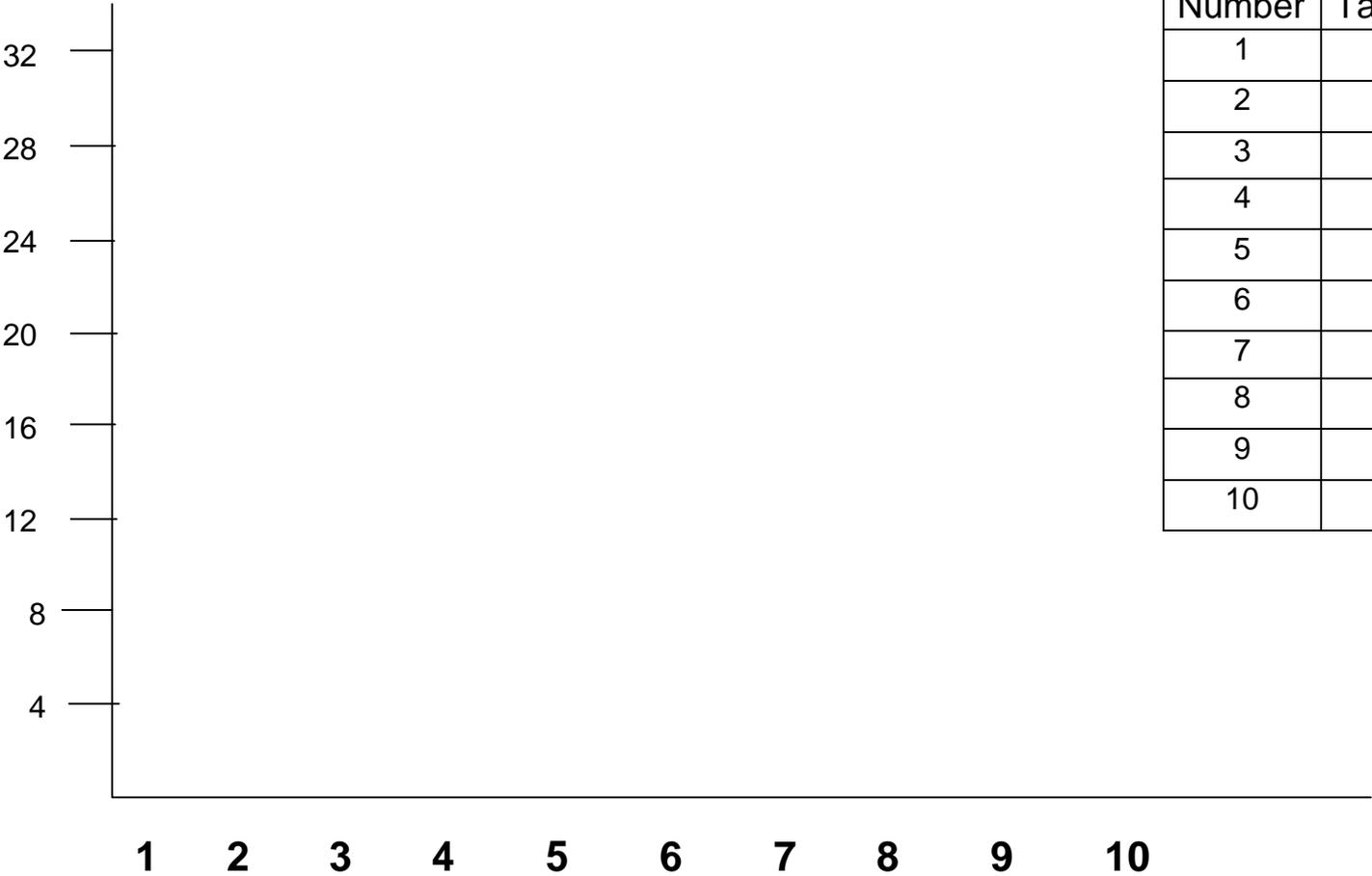**Resources needed to teach this unit:**

- Resource sheet 6b.1
- Resource sheet 6b.2
- Resource sheet 6b.3
- Resource sheet 6b.4
- Resource sheet 6b.5
- OHT 6b.1
- OHT 6b.2
- OHT 6b.3
- OHT 6b.4
- OHP Calculator
- Calculators

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education and skills

Planning sheet	Day One (page 1 of 2)	Unit 6b *Handling data 2*	Term: *Autumn*	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 fractions.	• Place fraction cards ½, 2¼, 1½, 1¼, 2¾, 1¾, ¼, ¾ at random on the board. Draw an empty number line below the fraction cards. Q Is a fraction a number? Establish that a fraction is a number and that all the fractions on the board are numbers. Q How can we sort these numbers? Establish that the numbers can be sorted in a variety of ways e.g. numbers that are greater than 1 and those that are less than one; whole numbers (integers), numbers with fractional parts (quarters and halves). Q Which is the largest number? • Place 2¾ on the right-hand end of the number line. Q Which is the smallest number? • Place ½ at the left-hand end of the number line. • Invite a child to mark 1 on the number line. Point to the left-hand side of the line and ask: Q What type of numbers can we place on this side of the number line? Agree that all the numbers less than one can be placed on the left-hand side. Invite a child to find all the numbers less than 1.	To solve a problem by representing and interpreting data and tables.	• Ask the children to write down two numbers from 1 to 5 and one number from 6 to 10. Q How can we record the numbers that have been chosen by the class? Take children's responses and establish that the data can be represented in a variety of ways. Say that you want to represent the information using a bar graph. • Show OHT 6b.1. Point to the horizontal axis and ask: Q What do you think this scale will represent? Establish that the horizontal axis will be used to record the different numbers chosen. Write on the OHT 'Number chosen'. Q What will the vertical scale represent? Establish that the vertical scale will be used to record the number of times (frequency) each number was chosen. Q Do you think the most common number chosen will be less than 5 or greater than 5? Take children's responses and reasons and agree on a 'most common' number. Discuss the fact that they are selecting two numbers from one interval and only one number from another equal interval. • Create a bar chart by recording the numbers chosen by the children on OHT 6b.1. Q What is the most common number chosen? Establish the answer and discuss the previous prediction from the children. Explain that it is more likely that the most common number chosen will be from the set 1 to 5 because two numbers have been selected from this set. • Show OHT 6b.2. Explain that this is a bar chart that shows how a class of children chose three numbers from 1 to 10. Explain that the children in this class also had to choose two numbers from the set 1 to 5 and one number from the set 6 to 10. Q What was the most common number chosen? Explain that the most common number (the number with the largest frequency) is called the mode. Q How many children selected a number greater than 6?	• Show OHT 6b.3. Explain that this is a list of babies' weights (masses) born at a local hospital during one weekend. Ask the children to work in pairs to discuss how this data could be represented. Q What would be the best way to represent this data to work out the number of babies and the most common weight? Discuss children's responses and explain that the data would be better represented using a tally chart. Q What is the most common weight? Establish that the most common weight is 3.4 kg. Q What is the weight of the lightest baby? Record on the board 2.5 kg. Q What is the weight of the heaviest baby? Record on the board 5 kg. Q What is the difference in weight between the lightest baby and heaviest baby? Establish that the difference is 2.5 kg and that the difference between the weight of the lightest and heaviest baby is called the range. Q If another baby weighing 5.3 kg was added to the data, what would the range be?
RESOURCES Fraction cards		RESOURCES OHT 6b.1 OHT 6b.2 OHT 6b.3 Activity sheet 6b.1 Number cards 1 to 10		

NNS Unit Plans

Planning sheet	Day One (page 2 of 2)	Unit 6b	Handling data 2	Term: *Autumn*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
	• Remove the fraction cards from the number line. Shuffle the cards and select 3 from the pack. Put the cards on the board and ask the children to order them and show their answers on a whiteboard.		Establish that 26 children selected a number greater than 6. Q How can we work out how many children are in the class? Establish that the number of children can be found by adding up the totals for the numbers selected greater than 5 or by adding up the totals for the numbers 1 to 5 and then halving. Establish that there are 32 children in the class. • Give out the number cards and Activity Sheet 6b.1. Children work in pairs to make two sets of cards showing the numbers 1-7 and the numbers 8-10. Children take it in turns to draw two cards from the set 1-7 and one card from the set 8-10. Each child has 10 turns and the results are recorded on the Activity Sheet first in the tally chart and then as a bar chart. Q How is this activity different from the previous one? Establish that the range has changed for each set of numbers. Q Who has a mode between 8 and 10? Take responses and establish that this is more likely than the previous example because of the smaller range.	**By the end of the lesson, children should be able to;** • **Explain that the mode is the most common in a set of data;** • **Organise data effectively to find the mode and the range.** (Refer to supplement of examples, section 6, page 117.)

Planning sheet	Day Two	Unit 6b	*Handling data 2*	Term: *Autumn*	Year Group: *5*

Oral and Mental		**Main Teaching**		**Plenary**

Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
Round a three-digit number to the nearest 10.	• Show cards A to G in turn. **Q** What is this number rounded to the nearest 10? • Place cards A and C on the board and remind children of the value of each card rounded to the nearest 10. **Q** What is the sum A and C rounded to the nearest 10? Take children's answers and ask the children how they worked out their answer. **Q** Did anyone round each number first before adding them together? Take children's responses and establish that for this example it does not matter if you round before or after the addition, you still get the same answer. • Place the remaining six cards on the board. **Q** Can you find two numbers where it does make a difference to the answer if you round before or after addition? Take children's responses and establish that there is a difference for B + F, B + H and F + H. **Q** Can you think of two numbers that would give different answers depending on when you rounded?	Begin to select the correct key sequence to carry out a calculation involving more than one step.	• Write on the board: 3 x 11 + 4. Ask the children to work out the answer and to discuss their answer with a partner. **Q** Who has an answer that differs from their partner's? Identify pairs of children who have different answers and record the two answers. Invite a pair of children to discuss their working and establish that there are two possible answers depending on the order that the calculation is carried out. **Q** How can we record the two different ways of carrying out the calculation? Establish that placing brackets in the calculation is a way of demonstrating the required order. Place the brackets in the appropriate place to give the two calculations. • Give out the calculators. Write on the board: 21 x (12 + 6) and (21 x 12) + 6. **Q** Which calculation will give the large total? Take predictions and ask the children to test on their calculator. Establish that the large total is obtained when the addition is carried out first. **Q** Will largest answer always be when the addition part of the calculation is always carried out first? Ask the children to work in pairs to make up their own calculations using any three numbers to test this statement. • Give out Activity Sheet 6b.2. Children work in pairs to complete the table using mental methods. **Q** What can you say about all the numbers in the difference column (the last column)? Establish that they are all multiples of 3. **Q** Will the difference always be a multiple of 3? **Q** Can you predict the difference between the two totals from the original calculations? Take children's ideas and test out their hypotheses.	• Write on the board: 17 + 27 – 14. **Q** How is this calculation different from the others we have been working with? Establish that this calculation contains the operations addition and subtraction and the previous calculations contained multiplication and addition. Ask the children to use brackets to show how this calculation can be carried out in two ways. Children show their answers on whiteboards. **Q** Which way will give the bigger total? Take children's responses. Ask them to carry out the calculation both ways and confirm that the answer to the calculation will be the same both ways. **Q** Will the total always be the same for any calculation of this type? Take children's responses and discuss their reasons. **By the end of the lesson, children should be able to:** • **Explain how to use brackets to show the order in which a calculation should be carried out.** (Refer to supplement of examples, section 6, page 71.)
RESOURCES Resource sheet 6b.1		RESOURCES Activity sheet 6b.2		

Planning sheet	**Day Three**		**Unit 6b**	***Handling data 2***	**Term:** *Autumn*	**Year Group:** *5*
Oral and Mental			**Main Teaching**			**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**			**Teaching Activities/ Focus Questions**
Develop understanding of the term 'mode'.	• Show OHT 6b.4. Ask children to sketch graphs on their whiteboard. **Q** What is the 'mode' on [ ] of your graphs?	Solve problems by representing and interpreting data in tables and charts.	• Present the following five statements to the children. Tell them that should decide if each statement is true or false, they must give an answer and cannot record 'don't' know'. Choose statements so that the children can only guess the correct answer. My hamster is a girl. (F) A goup is a fish. (T) My favourite colour is red. (F) Hemlock is a type of wood. (T) My father has a beard. (F) Give children the answer to each of the statements and ask them to count up how many they got correct. • Show OHT 6b.4. Explain that you want to record the results obtained by the children. **Q** How could we label the bar chart to record how many answers children got right? Establish that the labels on the bar chart could be number correct (x-axis), number of children (y-axis). Collect children's responses and record them on the bar chart. **Q** How many children got more than 3 correct? **Q** What was the most common number correct? Remind children that this is called the mode. **Q** How can we use the bar chart to work out how many children are in the class? The mode should be 2 or 3 and the shape of bar chart should be symmetrical around these values. **Q** Why do you think 2 (or 3) is the most common answer? Discuss with the children the nature of the questions. Explain that the questions are so 'difficult' that all you can do is guess and therefore for each question you have a 50% chance of guessing correctly. • Show OHT 6b.5. Explain that the bar charts have been made in a different way. Say that for these bar charts the children were asked five questions and had to write down the answers. Refer children to the first bar chart. **Q** What is the mode? **Q** How many children are in the class? Establish that we cannot answer this question because there is no scale for the frequency. **Q** Do you think it was easy for the children to work out the answers to the questions? Take children's responses and establish that some of the five questions must have been quite difficult. Write on a scale that would give an appropriate number of children in the class. Ask the children to work in pairs. For the other bar chart the children should: - identify the mode; - number of children in the class; - think of five questions that might have been used to generate each bar chart.			• Invite a pair of children to ask the questions they have made up for the second bar chart. Record the number of questions answered correctly on the OHT. Compare the shape of the chart with the one on the Activity Sheet. **Q** Which questions should we change to make our bar chart look more like the one on the Activity Sheet? Establish the difference between the numbers answered correctly on each chart and discuss if some of the questions should be made easier or more difficult. **By the end of the lesson, children should be able to:** • **Find the mode from a bar chart;** • **Interpret information from a bar chart.** (Refer to supplement of examples, section 6, page 117.)
RESOURCES OHT 6b.4 Whiteboard		RESOURCES OHT 6b.4 OHT 6b.5				

A 364	B 245	C 389	D 678
E 231	F 115	G 841	H 555

Frequency

Number	Tally	Frequency
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

32

28

24

20

16

12

8

4

1   2   3   4   5   6   7   8   9   10

Number chosen

Calculation 1	Total 1	Calculation 2	Total 2	Total 1 – Total 2
4 x (7 + 3)	40	(4 x 7) + 3	31	9
4 x (5 + 6)		(4 x 5) + 6		
4 x (8 + 1)		(4 x 8) + 1		
4 x (6 + 9)		(4 x 6)+ 9		
4 x (8 + 4)		(4 x 8)+ 4		
4 x (6 + 7)		(4 x 6)+ 7		
4 x (11 + 5)		(4 x 11) + 5		

Bar Graph to show the numbers selected by our class

Frequency

32 —

28 —

24 —

20 —

16 —

12 —

8 —

4 —

1   2   3   4   5   6   7   8   9   10

Bar Graph to show the numbers selected

Frequency

Number chosen
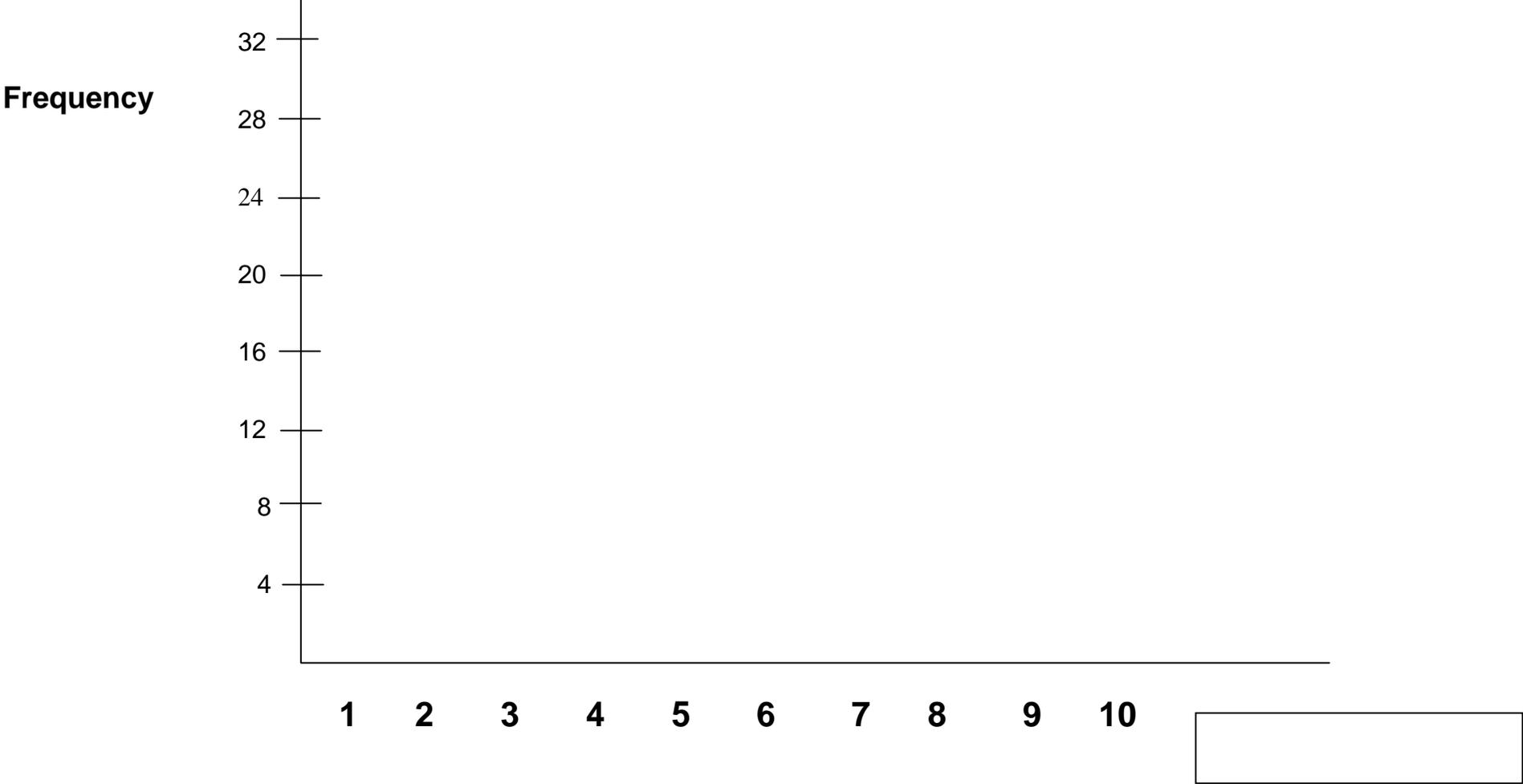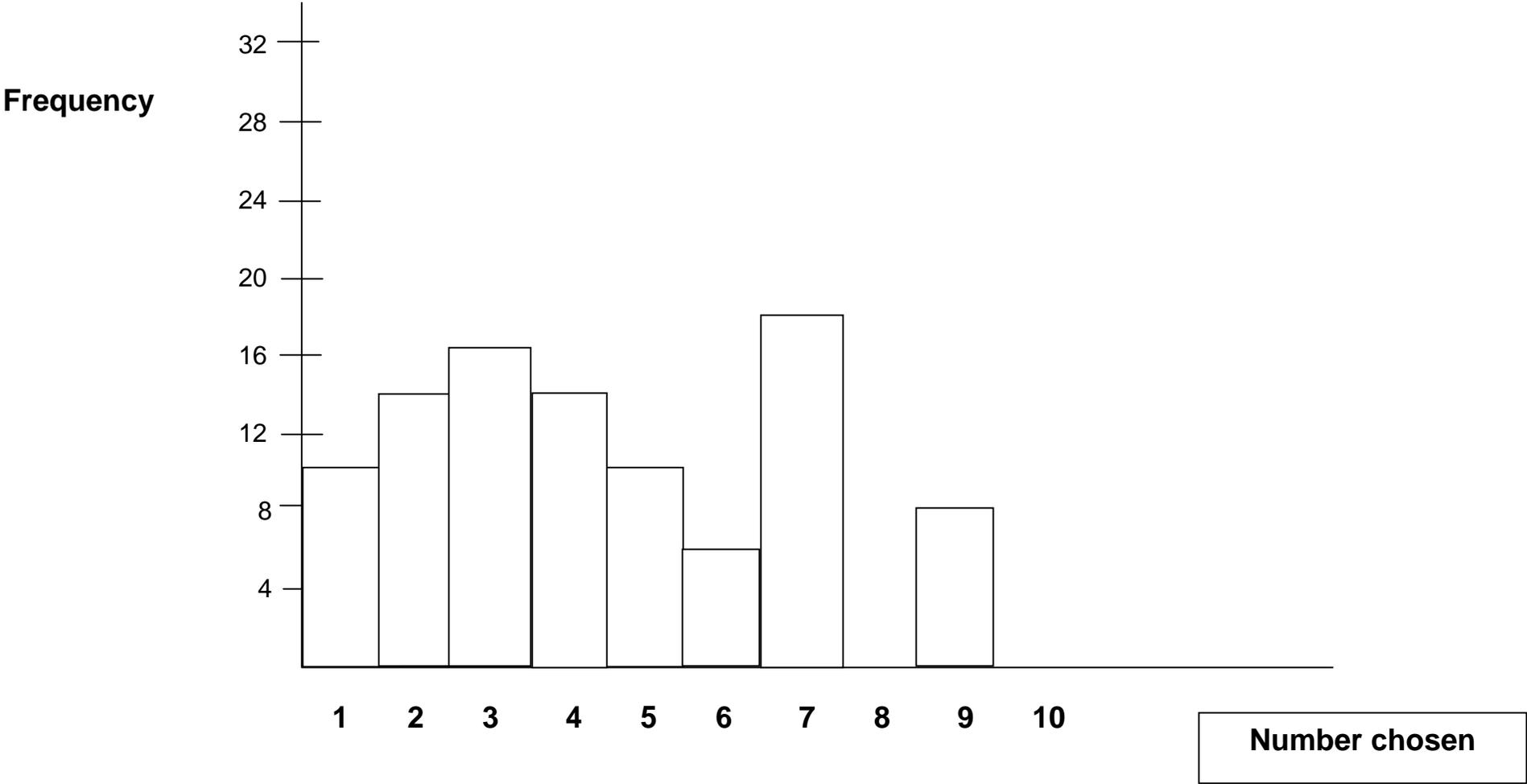
Babies' Weights

3 kg	**3.4 kg**	**4 kg**	**4.2 kg**
3.2 kg	**2.5 kg**	**3.4 kg**	**3.8 kg**
2.9 kg	**3.4 kg**	**5 kg**	**3.1 kg**
3.2 kg	**3.4 kg**	**3.3 kg**	**2.9 kg**
3.5 kg	**3.4 kg**	**2.8 kg**	**3 kg**

Bar Graph to show how many statements correct

Frequency

Number correct

0   1   2   3   4   5

Frequency

Number correct

0   1   2   3   4   5