DATA HANDLING

A Complete Mathematics Worksheet Pack

Learn • Practise • Apply • Reason

CONCEPTS	SKILLS	APPLICATION
Tally and frequency tables	Collect and organise data	Real-life surveys
Pictograms and bar graphs	Read, interpret and compare	Spot patterns and trends
Line graphs and averages	Calculate and explain	Reason from evidence

A flexible, non-grade-specific mathematics resource

Name: _____

Date: _____

Use the charts, show your thinking and support conclusions with evidence.

1. Understanding Data

A class survey asks 20 learners for their favourite fruit. Responses: apple, banana, apple, orange, banana, apple, grape, banana, orange, apple, grape, banana, apple, orange, banana, apple, grape, orange, banana, apple.

1. What is the data about? 2. How many responses were collected? 3. List the different fruit choices.

4. Which fruit appears most often? 5. Which appears least often? 6. How many chose banana?

7. How many more chose apple than grape? 8. Write one other question this data could answer.

Organise the results in this frequency table:

Fruit	Tally	Frequency
Apple		
Banana		
Orange		
Grape		

My working / notes:

2. Tally Charts and Frequency Tables

A group recorded the number of books read by 15 learners in one month: 0, 1, 2, 1, 3, 2, 0, 4, 1, 2, 3, 1, 0, 2, 1.

Example of a completed tally chart:

Books read	Tally	Frequency
0	|||	3
1	||||/	5
2	||||	4
3	||	2
4	|	1

1. Use the chart to check the frequency of each number of books. 2. Which number was most common?

3. How many learners read at least 2 books? 4. How many read fewer than 2 books?

5. What is the total number of learners? 6. Why are tally marks grouped in fives?

7. Write one conclusion from the data.

Try it: Survey 10 people about their preferred season. Record responses using tally marks and frequencies.

3. Pictograms

The pictogram below shows reusable bottles sold at a school fair. Each ● represents 2 bottles.

Day	Bottles sold (1 symbol = 2 bottles)
Mon	● ● ●
Tue	● ● ● ● ●
Wed	● ● ● ●
Thu	● ●
Fri	● ● ● ● ● ●

1. How many bottles were sold on Monday? 2. How many on Wednesday?

3. Which day had the highest sales? 4. Which day had the lowest sales?

5. How many bottles were sold altogether? 6. How many more were sold on Friday than Thursday?

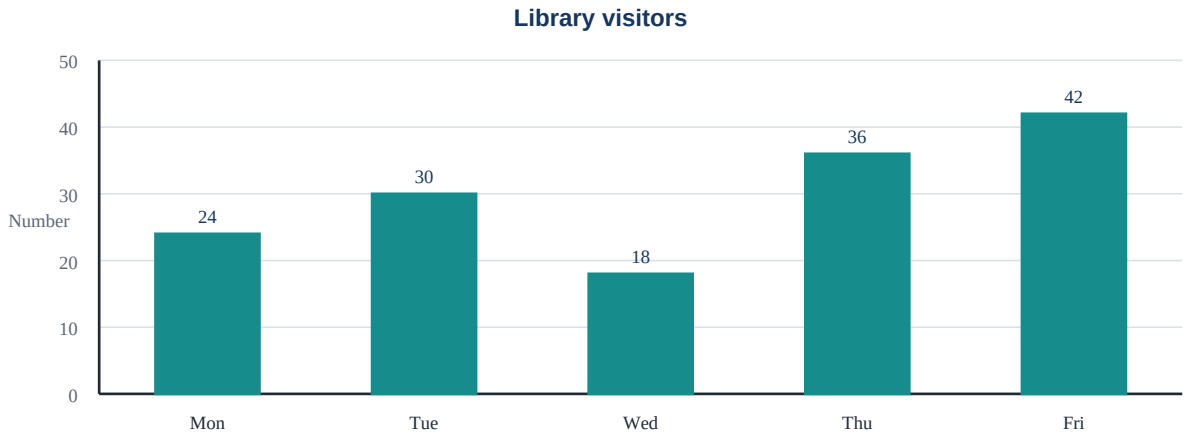
7. If each symbol represented 5 bottles, how many would Tuesday's symbols represent?

8. Why must a pictogram include a clear key?

Create your own pictogram: Favourite pets of 12 learners. Choose a key and draw symbols below.

4. Bar Graphs

A library recorded visitors to its children's section: Monday 24, Tuesday 30, Wednesday 18, Thursday 36, Friday 42.



1. Study the bar graph. What does the horizontal axis show? What does the vertical axis show?

2. Which day had the most visitors? 3. Which day had the fewest?

4. How many visitors came on Monday and Tuesday combined? 5. How many more on Friday than Wednesday?

6. Find the total visitors across the five days. 7. Why is a bar graph suitable for this data?

Now draw your own bar graph: use the blank axes below to show a survey of your choice.

5. Interpreting and Comparing Graphs

Two clubs recorded new members over four weeks. Art Club: 6, 8, 5, 11. Science Club: 4, 7, 9, 8.



1. In which week did Art Club gain the most members? 2. Which week had the highest Science Club intake?

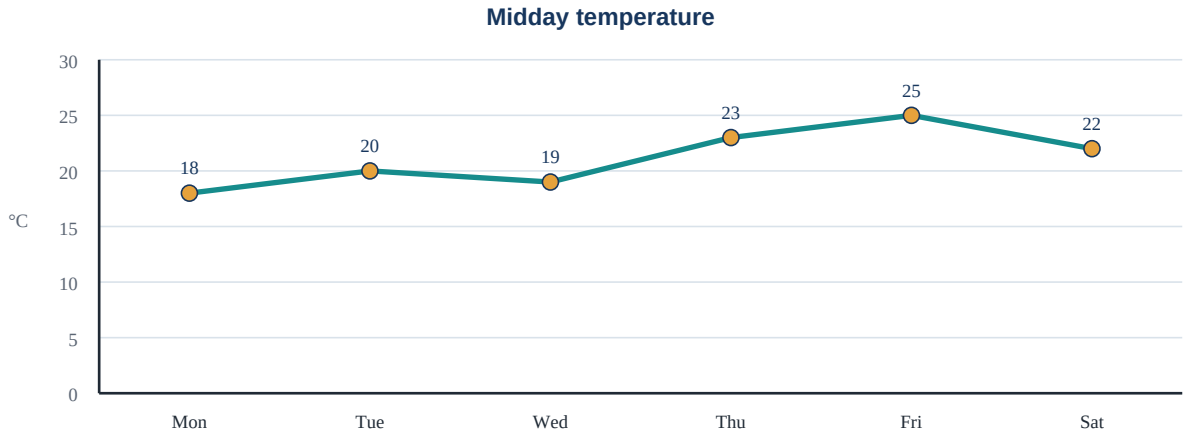
3. Which club gained more members in Week 1? 4. Find each club's four-week total.

5. Which club had the greater total? 6. How many joined both clubs in Week 3 altogether?

7. Write two comparisons supported by the data. 8. Does this show each club's total membership? Explain.

6. Line Graphs and Change Over Time

Midday temperatures across six days: Monday 18°C, Tuesday 20°C, Wednesday 19°C, Thursday 23°C, Friday 25°C, Saturday 22°C.



1. Study the line graph. On which day was the temperature highest? 2. Which day was lowest?

3. Between which consecutive days was the greatest increase? 4. What was the change from Friday to Saturday?

5. Describe the overall trend from Monday to Friday. 6. Why is a line graph suitable for this data?

Try it: Record the temperature at the same time for five days and plot your own line graph.

7. Mean, Median, Mode and Range

Use the data set: 4, 7, 5, 9, 7, 6, 8, 7, 3.

1. Arrange the values in ascending order. 2. Find the mean. 3. Find the median.

4. Find the mode. 5. Find the range. 6. A value of 20 is added. Which measure changes most noticeably? Explain.

7. When might the median be more useful than the mean?

Show your calculations:

8. Collecting Data and Asking Fair Questions

A school wants to find out how learners travel to school.

1. Write a clear survey question. 2. Give five possible response categories.

3. Suggest a sample size and justify it. 4. Why should different year groups be included?

5. Explain why asking only close friends may create bias. 6. Write one leading or unfair question.

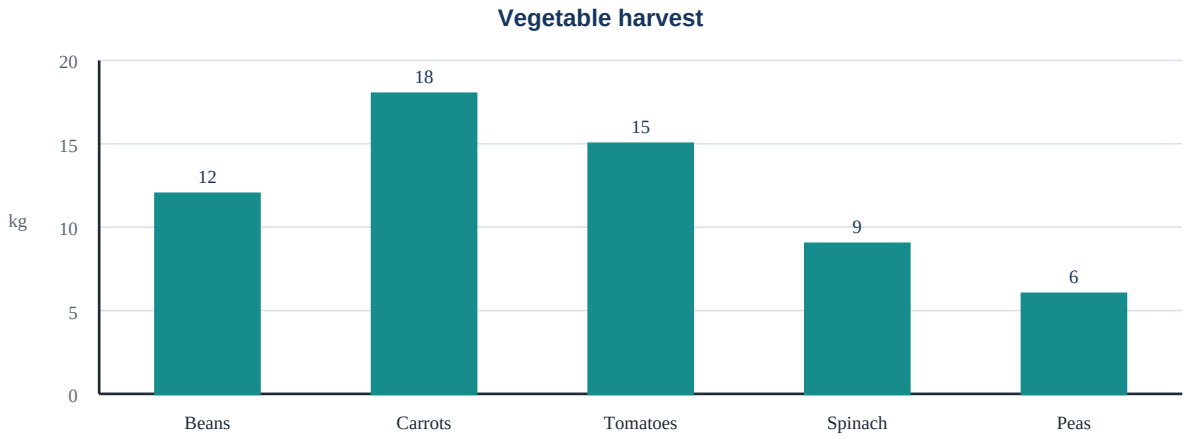
7. Suggest a way to record responses accurately. 8. What if a response does not fit any category?

Design your survey table:

Travel method	Tally	Frequency
Walk		
Cycle		
Car		
Bus		
Other		

9. Data in Real Life

A community garden tracked its weekly harvest: beans 12 kg, carrots 18 kg, tomatoes 15 kg, spinach 9 kg, peas 6 kg.



1. Which vegetable had the largest harvest? 2. Which had the smallest?

3. Find the total harvest. 4. How many kilograms more carrots than spinach?

5. What fraction of the total was tomatoes? Simplify. 6. If half the beans were donated, how many kilograms were donated?

7. Suggest another way the garden could use this data to make a decision.

10. Probability and Data

A bag contains 5 red, 3 blue and 2 yellow counters. One counter is selected at random.

Colour	Number of counters
Red	5
Blue	3
Yellow	2

1. How many counters are in the bag? 2. Which colour is most likely? 3. Which is least likely?

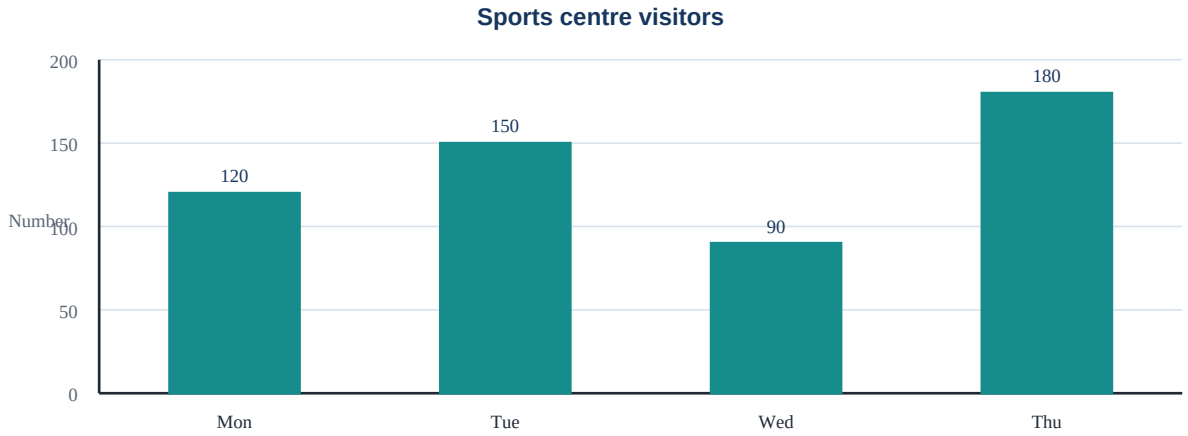
4. Find the probability of selecting blue. 5. Find the probability of not selecting yellow.

6. In 20 selections with replacement, would you expect exactly 10 red counters? Explain.

7. Record 20 trials and compare your results with the expected proportions.

11. Data Detective Challenge

A sports centre recorded visitors: Monday 120, Tuesday 150, Wednesday 90, Thursday 180. The manager says, “Visitor numbers increased every day.”



1. Is the manager's statement correct? Explain using the data. 2. Find the total visitors.

3. Find the mean visitors per day. 4. Find the range.

5. How many more visitors came Thursday than Wednesday? 6. If Friday had 160 visitors, find the new five-day total.

7. Suggest one reason visitor numbers might change. 8. Write a more accurate statement about the pattern.

Teacher Answer Key

Suggested answers. For open-ended questions, accept other reasonable responses supported by clear reasoning.

Worksheet 1 — 1. Favourite fruit. 2. 20. 3. Apple, banana, orange, grape. 4. Apple (7). 5. Grape (3). 6. 5. 7. 4 more. Frequency table: apple 7, banana 5, orange 4, grape 3. Note: responses total 19? Check data list; the provided sequence contains 20 responses and apple=7, banana=5, orange=4, grape=3, total=19; one count is missing—see note below.

Worksheet 2 — Frequencies: 0=3, 1=5, 2=4, 3=2, 4=1. 2. 1 book. 3. 7. 4. 8. 5. 15. 6. Grouping in fives makes totals easier to count. 7. Any supported conclusion.

Worksheet 3 — 1. 6. 2. 8. 3. Friday (12). 4. Thursday (4). 5. 40. 6. 8. 7. 25 bottles. 8. The key explains each symbol's value.

Worksheet 4 — Graph values: 24, 30, 18, 36, 42. 2. Friday. 3. Wednesday. 4. 54. 5. 24. 6. 150. 7. Bar graphs compare categories.

Worksheet 5 — 1. Week 4. 2. Week 3. 3. Art Club by 2. 4. Art=30; Science=28. 5. Art Club. 6. 14. 7. Any two accurate comparisons. 8. No; only new members over four weeks are shown.

Worksheet 6 — 1. Friday. 2. Monday. 3. Wednesday to Thursday (+4°C). 4. Decrease of 3°C. 5. Overall rise from 18°C to 25°C. 6. It shows change over ordered time points.

Worksheet 7 — 1. 3, 4, 5, 6, 7, 7, 7, 8, 9. 2. 56/9 = 6 2/9 (about 6.22). 3. 7. 4. 7. 5. 6. 6. Mean rises substantially; median and mode remain 7. 7. When extreme values distort the mean.

Worksheet 8 — 1. Example: How do you usually travel to school? 2. Walk, cycle, car, bus, other. 3. Any justified representative sample. 4. To include varied experiences. 5. Friends may have similar habits, causing bias. 6. Example: Don't you agree walking is best? 7. Tally/frequency table. 8. Add 'other' or record separately.

Worksheet 9 — 1. Carrots (18 kg). 2. Peas (6 kg). 3. 60 kg. 4. 9 kg. 5. 15/60=1/4. 6. 6 kg. 7. Any sensible decision.

Worksheet 10 — 1. 10. 2. Red. 3. Yellow. 4. 3/10. 5. 8/10=4/5. 6. No; 10 is expected, not guaranteed. 7. Results vary; compare observed frequencies with expected proportions.

Worksheet 11 — 1. No; numbers fall from Tuesday to Wednesday before rising Thursday. 2. 540. 3. 135. 4. 90. 5. 90. 6. 700. 7. Any plausible reason. 8. Numbers fluctuated, dipping Wednesday and peaking Thursday.

Teacher note: The fruit-response list in Worksheet 1 should be treated as a 19-response list (apple 7, banana 5, orange 4, grape 3). The opening sentence says 20; please use 19 as the correct total.