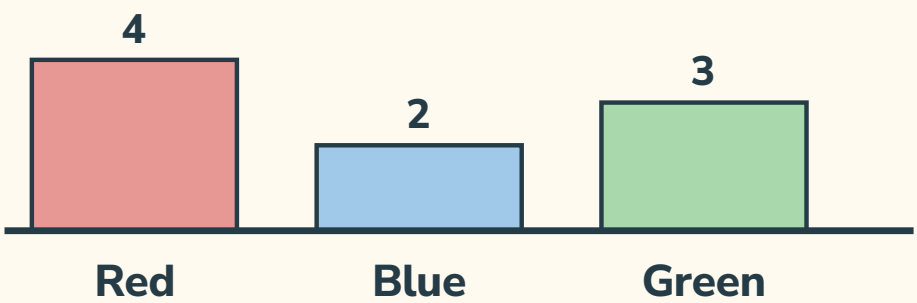
MATHS FIELD GUIDE · GRADE 3

Data turns observations into evidence

OPENING PROBLEM

Which has the most votes?



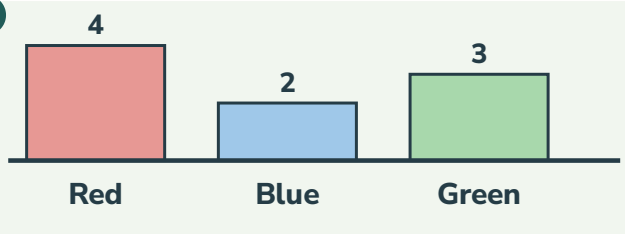
02 Read a display one mark at a time
03 Rules and worked cases
04 Reading the fruit stall chart
05 Make one mark for each vote
06 Check your reasoning

ILLUSTRATED PROBLEM SHEET

Read a display one mark at a time

The key says what a mark is worth.

1



Which has the most votes?

Red has four. It has one more vote than green.

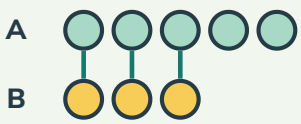
2



Each counter means two votes. How many votes in A?

Three marks represent six votes.

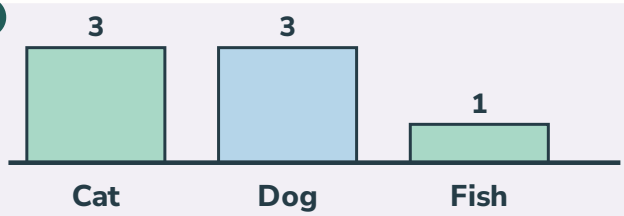
3



With one vote per mark, how many more voted A?

Three pairs match. Two votes remain in A.

4



Is there one winner?

Cat and dog tie with three each. Seven votes were cast.

A row with zero marks
zero recorded votes.

Two equally long rows under the same key
a tie.

CHAPTER PROBLEM

A pictograph key says one symbol represents two votes. What do four full symbols represent?

Eight votes: four groups of two.

MATHS REFERENCE · GRADE 3

Data turns observations into evidence

Data are recorded observations or measurements. A category describes a type, such as a favourite fruit. Frequency tells us how often a category occurs.

A display organises data so we can compare amounts and answer a question.

Four cases to recognise

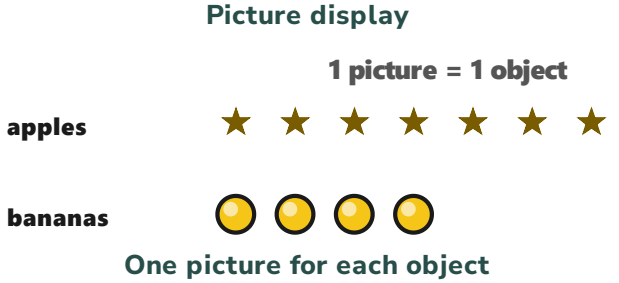
Situation	What to do and why
One kite symbol stands for four kites	Three whole symbols record twelve kites.
A half symbol under that key	It records half of four, or two kites.
Two rows show five and three symbols	The gap is two symbols. The difference is eight kites.
A row must show 18 kites	Draw four whole symbols and one half symbol. Check 16 + 2 = 18.

Read the model

Build the idea

Ask each person one question and record each answer once. Group matching answers together.

In a bar chart, the bar length represents frequency. Read the labels and scale before comparing bars.

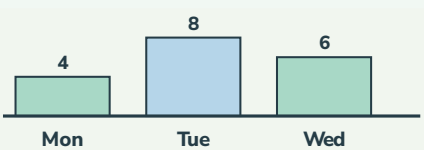


Why it works

Keeping one record for each response protects the count. A display changes the organisation, not the original observations.

Equal intervals on the scale represent equal changes in frequency. A long-looking bar is meaningful only with its scale.

data Recorded observations or measurements.
category A named type of response.
frequency How many times a response occurs.



How many records altogether?

4 + 8 + 6 = 18. The tallest bar alone cannot give the total.

WORKED INVESTIGATION

Reading the fruit stall chart

Each fruit symbol stands for two sales. The apple row has four symbols and the pear row has three. Multiply before comparing the sales.

Look at this part	What it tells you
Apples	8 sales
Pears	6 sales
Difference	2 sales

Work it through

The stall sells two more pears. One whole symbol belongs on the pear row, which now ties the apple row.

Catch the mistake

Four symbols mean eight apples sold. Reporting four sales ignores the key that assigns a value to each symbol.

Compare the cases

Follow an example

Seven people choose apples and four choose bananas. Apples have frequency seven; bananas have frequency four.

Eleven responses were recorded. Three more people chose apples than bananas. Each conclusion refers to the collected group.

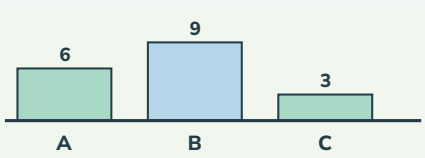
What changes? What stays true?

The chart tells us about the people asked. It does not prove everybody has the same preferences.

For a pictograph, read the key: one picture may represent more than one response. Count the represented values, not just the pictures.

Change one condition

If a new key uses one symbol for four sales, the same eight apple sales need only two symbols.



How many more in B than in C?

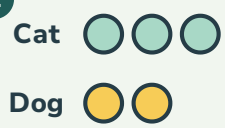
Nine minus three gives six. B also has three times C.

ILLUSTRATED PROBLEM SHEET

Make one mark for each vote

With a one-for-one key, each counter stands for one person's choice.

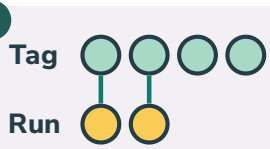
1



How many chose cat?

Three. Point to each counter once.

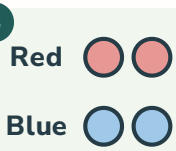
2



How many more chose tag?

Two tag counters have no partner in the run row.

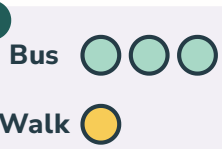
3



Did either colour win?

No. Each got two votes.

4



One bus voter changes to walking. What happens?

Two now ride and two walk. There are still four voters.

Three votes and no votes
three altogether.

Three votes and a second group of three
a tie.

CHAPTER PROBLEM

Eight children choose mango, five choose banana and two choose pear. How many children chose a fruit other than mango?

5 + 2 = 7 children. Add the frequencies for banana and pear.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

Check your reasoning

Try the problem	Solution and reasoning
01 If the key changes from one vote per mark to two, do the voters change?	No. Each complete pair of votes now uses one mark.
02 A pupil votes twice. What goes wrong with the display?	It now counts an extra vote from the same person. Keep one mark per voter.
03 A banana row shows five symbols worth two sales each. How many more banana sales were there than pear sales in the original chart?	Bananas account for ten sales and pears for six. The difference is four sales.
04 One symbol stands for six children. Two and a half symbols represent how many?	Two symbols give twelve, half gives three. Total fifteen.
05 One row has 24 votes and another 12. Under a key of four votes per symbol, how many extra symbols?	Difference twelve votes, shown by three symbols.

Key	Symbols	Votes
2 votes	4	8
4 votes	2	8

Which drawing represents more votes?

They represent the same eight. The number of symbols depends on the key.

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