

Cambridge Primary Mathematics 0096 · Stage 2**CM2-U4**

Collecting and showing data

Statistics — data · 4 source-bound 30-minute lessons.

Unit overview

This unit teaches statistics — data through 4 source-bound read-along lessons. Each lesson moves from concrete objects to a pictorial record and then an abstract record. Learners use the same maths question and evidence requirement across all three reading routes. The final task compares the representations learners made across the unit.

Guiding question

How can stories help us reason about collecting and showing data?

Success criteria

- I can build the maths from each story with objects.
- I can draw or diagram the same maths.
- I can record a result and explain the story evidence.
- I can demonstrate TWM.07 while I work.

Learning objectives

2Ss.02

Record and show data in lists, tables, Venn and Carroll diagrams, tally charts, block graphs or pictograms, and explain the choice.

2Ss.01

Carry out a simple investigation to answer a question with categories of data.

2Ss.03

Describe data, spotting similarities and differences, and discuss conclusions.

TWM.07

Critiquing: compare ideas, pictures or methods and weigh up their strengths.

1

Tally charts

Let's Make a Tally Chart · 2Ss.02

Shared maths question

How does Let's Make a Tally Chart help us explore tally charts?

Evidence required

A concrete model, a pictorial record and a matching abstract record, all checked against the read-along.

Governed source lesson: One person, one mark: building a tally chart from a class survey
· Representation · Recording data with tally marks, one mark per response

1

Find the maths in the story

4 min

2Ss.02

Read-along: Listen with highlighting and pause at the passage used by "One person, one mark: building a tally chart from a class survey".

Teacher: Take the food list your table wrote and carry it to five classmates. Ask each one, hot dog, hamburger, or chicken, and make one straight mark beside the food that person names before you walk to the next. One person gives you one mark, never two, and you make the mark while they are still standing there.

Learners: Notice the story evidence and say the maths question in their own words.

2

Model it with objects

5 min

2Ss.02

Read-along: Replay the source passage while building the quantities, shapes or measures it supplies.

Teacher: Keep asking until one food has five marks beside it. Lay the fifth mark slantwise across the four already standing there instead of adding a fifth upright. Say the rule aloud as your hand crosses, every fifth mark goes across the other four, and check a partner's sheet for any run of five uprights that never got crossed.

Learners: Build a concrete model and check that each part matches the read-along.

3

Try the concrete task

6 min

2Ss.02

Read-along: Keep the relevant story page visible as the class tests the model.

Teacher: Touch every mark beside one food, one touch and one number word, and say the number you land on. Then do the same for the other two foods. Write nothing yet, just say each number and have your partner touch the marks again to see whether they land on the same word.

Learners: Change or compare the objects, then explain what stayed the same and what changed.

4

Draw the maths

5 min

2Ss.02

Read-along: Return to the same story evidence before learners make a pictorial record.

Teacher: Model a clear drawing, diagram or mark for the concrete work without adding a quantity the story does not supply.

Learners: Draw the model and label the important parts with maths language.

5

Record and solve

6 min

2Ss.02

Read-along: Use the read-along once more as the evidence check for the abstract record.

Teacher: Hold up your finished sheet and tell your partner what it now holds, using the book's two words in one sentence, that the sheet is a tally chart and what it shows is data. Then say what a person who was not in the room could learn from it and what they could not.

Learners: Record the result with suitable numbers, words or symbols and link it back to the picture.

6

Reflect and convince

4 min

TWM.07

Read-along: Show the source passage and invite a final evidence-based check.

Teacher: Name the Thinking and Working Mathematically focus: Critiquing: compare ideas, pictures or methods and weigh up their strengths.

Learners: Use the concrete model, drawing and record together to justify the answer.

Solo

Read independently and mark the evidence used by the shared model.

Supported

Read with the audio, pause at the named source passage and use the response frame.

Listening

Listen with highlighting, build the same model and explain it orally.

Assessment check: The learner shows the objective with concrete, pictorial and abstract evidence and explains how the read-along supports the model.

2

Keeping a tally

Tally Cat Keeps Track · 2Ss.02

Shared maths question

How does Tally Cat Keeps Track help us explore keeping a tally?

Evidence required

A concrete model, a pictorial record and a matching abstract record, all checked against the read-along.

Governed source lesson: Four Marks and a Cross · Representation · Recording a count as tally marks in groups of five, to 18

1

Find the maths in the story

4 min

2Ss.02

Read-along: Listen with highlighting and pause at the passage used by “Four Marks and a Cross”.

Teacher: Lay your cubes in a line. Draw one tally mark for each cube. Touch the cube as you make the mark. Stop after four marks. Now count the cubes, then count the marks. Do the two numbers agree?

Learners: Notice the story evidence and say the maths question in their own words.

2

Model it with objects

5 min

2Ss.02

Read-along: Replay the source passage while building the quantities, shapes or measures it supplies.

Teacher: Put a fifth cube down. Draw the fifth mark across the other four, not beside them. Cover the group with your finger and say how many. Do not count the marks one by one. Now do cubes six, seven, eight, nine and ten and make a second crossed group.

Learners: Build a concrete model and check that each part matches the read-along.

3

Try the concrete task

6 min

2Ss.02

Read-along: Keep the relevant story page visible as the class tests the model.

Teacher: Keep going. Build a third crossed group from cubes eleven to fifteen. Say five, ten, fifteen out loud and point at each crossed group as you say its number.

Learners: Change or compare the objects, then explain what stayed the same and what changed.

4

Draw the maths

5 min

2Ss.02

Read-along: Return to the same story evidence before learners make a pictorial record.

Teacher: Model a clear drawing, diagram or mark for the concrete work without adding a quantity the story does not supply.

Learners: Draw the model and label the important parts with maths language.

5

Record and solve

6 min

2Ss.02

Read-along: Use the read-along once more as the evidence check for the abstract record.

Teacher: Put down three more cubes. Make three more marks. Do not cross this group, it has only three marks in it. Say how many cubes you counted in all. Swap strips with your partner and check their marks against their cubes.

Learners: Record the result with suitable numbers, words or symbols and link it back to the picture.

6

Reflect and convince

4 min

TWM.07

Read-along: Show the source passage and invite a final evidence-based check.

Teacher: Name the Thinking and Working Mathematically focus: Critiquing: compare ideas, pictures or methods and weigh up their strengths.

Learners: Use the concrete model, drawing and record together to justify the answer.

Solo

Read independently and mark the evidence used by the shared model.

Supported

Read with the audio, pause at the named source passage and use the response frame.

Listening

Listen with highlighting, build the same model and explain it orally.

Assessment check: The learner shows the objective with concrete, pictorial and abstract evidence and explains how the read-along supports the model.

3

Which graph is best?

The Great Graph Contest · 2Ss.03

Shared maths question

How does The Great Graph Contest help us explore which graph is best??

Evidence required

A concrete model, a pictorial record and a matching abstract record, all checked against the read-along.

Governed source lesson: Ask, Write It Down, Then Build It · Application · Asking a survey question, recording each answer, and building columns from the record

1

Find the maths in the story

4 min**2Ss.03**

Read-along: Listen with highlighting and pause at the passage used by “Ask, Write It Down, Then Build It”.

Teacher: Write one question you can ask everybody in the room, and write the three answers a person is allowed to give. Try it on your partner first. If their answer does not fit any of your three, fix the question or fix the answers before you ask anybody else.

Learners: Notice the story evidence and say the maths question in their own words.

2

Model it with objects

5 min**2Ss.03**

Read-along: Replay the source passage while building the quantities, shapes or measures it supplies.

Teacher: Go round and ask your question, and make one mark on your sheet for each person as they answer. Mark it while they are still standing there, not afterwards from memory. Keep going until you have asked at least twelve people, and do not skip a person whose answer surprises you.

Learners: Build a concrete model and check that each part matches the read-along.

3

Try the concrete task

6 min

2Ss.03

Read-along: Keep the relevant story page visible as the class tests the model.

Teacher: Set your column base card down with your three answers written along the bottom. Read your sheet mark by mark and stand one paper square in the right column for each mark. Every square is the same size, so do not stretch one to fill a gap. Count the squares in each column against the marks on your sheet when you are done.

Learners: Change or compare the objects, then explain what stayed the same and what changed.

4

Draw the maths

5 min

2Ss.03

Read-along: Return to the same story evidence before learners make a pictorial record.

Teacher: Model a clear drawing, diagram or mark for the concrete work without adding a quantity the story does not supply.

Learners: Draw the model and label the important parts with maths language.

5

Record and solve

6 min

2Ss.03

Read-along: Use the read-along once more as the evidence check for the abstract record.

Teacher: Write your question across the top of the graph as its title, and check that each column is labelled with the answer it holds. Then show it to a pair who was not asked, and let them tell you what most people said. If they cannot tell, add the label that was missing.

Learners: Record the result with suitable numbers, words or symbols and link it back to the picture.

6

Reflect and convince

4 min

TWM.07

Read-along: Show the source passage and invite a final evidence-based check.

Teacher: Name the Thinking and Working Mathematically focus: Critiquing: compare ideas, pictures or methods and weigh up their strengths.

Learners: Use the concrete model, drawing and record together to justify the answer.

Solo

Read independently and mark the evidence used by the shared model.

Supported

Read with the audio, pause at the named source passage and use the response frame.

Listening

Listen with highlighting, build the same model and explain it orally.

Assessment check: The learner shows the objective with concrete, pictorial and abstract evidence and explains how the read-along supports the model.

4

Ask a question, collect the answers

Who's Got Spots? · 2Ss.01

Shared maths question

How does Who's Got Spots? help us explore ask a question, collect the answers?

Evidence required

A concrete model, a pictorial record and a matching abstract record, all checked against the read-along.

Governed source lesson: Ask Everyone, Then Say Why It Is True · Application · Taking a survey with three answers and justifying statements from the chart

1

Find the maths in the story

4 min

2Ss.01

Read-along: Listen with highlighting and pause at the passage used by "Ask Everyone, Then Say Why It Is True".

Teacher: Ask every person in the room the book's question, exactly as it is printed, and write each answer on your list as yes, no or maybe. Ask everybody once and nobody twice. Count your list and say how many people you asked.

Learners: Notice the story evidence and say the maths question in their own words.

2

Model it with objects

5 min

2Ss.01

Read-along: Replay the source passage while building the quantities, shapes or measures it supplies.

Teacher: Make three rows headed yes, no and maybe, and put one mark in a row for each answer on your list, crossing the answer off as you mark it. Count the marks in each row, then count all the marks, and say whether that total matches the number of people you asked.

Learners: Build a concrete model and check that each part matches the read-along.

3

Try the concrete task

6 min

2Ss.01

Read-along: Keep the relevant story page visible as the class tests the model.

Teacher: Make a sentence about your chart, say it to your partner, then say why it is true with a finger on the row that proves it. Your partner says whether that row really shows it. Do one sentence about a single row and one that puts two rows beside each other.

Learners: Change or compare the objects, then explain what stayed the same and what changed.

4

Draw the maths

5 min

2Ss.01

Read-along: Return to the same story evidence before learners make a pictorial record.

Teacher: Model a clear drawing, diagram or mark for the concrete work without adding a quantity the story does not supply.

Learners: Draw the model and label the important parts with maths language.

5

Record and solve

6 min

2Ss.01

Read-along: Use the read-along once more as the evidence check for the abstract record.

Teacher: Hear the book's five sentences one at a time and say for each whether your chart can settle it. Where it cannot, say what the chart would need: a mark tells you how many said maybe, and a name tells you who. Say which two of the five need names.

Learners: Record the result with suitable numbers, words or symbols and link it back to the picture.

6

Reflect and convince

4 min

TWM.07

Read-along: Show the source passage and invite a final evidence-based check.

Teacher: Name the Thinking and Working Mathematically focus: Critiquing: compare ideas, pictures or methods and weigh up their strengths.

Learners: Use the concrete model, drawing and record together to justify the answer.

Solo

Read independently and mark the evidence used by the shared model.

Supported

Read with the audio, pause at the named source passage and use the response frame.

Listening

Listen with highlighting, build the same model and explain it orally.

Assessment check: The learner shows the objective with concrete, pictorial and abstract evidence and explains how the read-along supports the model.

End-of-unit task

Choose one model from each read-along. Put the models in a useful order, compare them, and explain how the concrete, pictorial and abstract records show the unit's maths.