Maths and Me: 1st Class – Short-Term Plan, Unit 4: Data 1 (October: Weeks 3&4)

Strand(s) > Strand Unit(s)	Data and Chance > Data.
Learning Outcome(s)	Through appropriately playful and engaging learning experiences children should be able to pose questions of interest, record and use data as evidence to answer those questions and communicate the findings.

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	**Tallies:** Explores and recognises different ways of collecting and representing data (U&C); Uses simple tallying for recording of data (U&C)		D Reason & Respond L1, 3, 4 D Write-Hide-Show L1, 3 C Maths Trail L1 C The Sound of a Number L2 C Think-Pair-Share L2–4 D Quick Images L3 C Choral Counting L4 D Notice & Wonder L3–4 **Print resources** Pupil's Book pages 26–29 Home/School Links Book page 12 PCMs 16, 17, 18 Unit 4 Maths Language Cards	**Intuitive Assessment:** responding to emerging misconceptions **Planned Interactions:** responding to insights gleaned from children's responses to learning experiences **Assessment Events:** information gathered from completion of the unit assessment in the Progress Assessment Booklet page 12
2	**Surveys:** Reads, interprets, poses questions about and discusses data displays such as concrete and visual charts (C)			
3	**Symbols:** Reads, interprets, poses questions about and discusses data displays such as concrete and visual charts (e.g. pictograms) (C); Recognises that data symbols hold and/or represent information or numerical value (U&C)			
4	**Pictograms:** Recognises that data symbols hold and/or represent information or numerical value (U&C); Reads, interprets, poses questions about and discusses data displays such as concrete and visual charts (e.g. pictograms) (C)			
5	**Review and Reflect:** Reviews and reflects on learning (U&C)			

Key: Elements: (U&C) Understanding and Connecting; (C) Communicating; (R) Reasoning; (A&PS) Applying and Problem-Solving. **CM: Cuntas Míosúil:** please tick when you have completed the focus of learning. **Learning Experiences:** C concrete activity; D digital activity; P activity based on printed materials, followed by lesson numbers.

Additional information for planning

Progression Continua	See '1st Class *Maths and Me* Progression Continua Overview' for a detailed breakdown of how all progression continua are covered.
Maths Language	See '1st Class *Maths and Me* Maths Language Overview', individual lesson plans and Unit 4 Maths Language Cards.
Equipment	See '1st Class *Maths and Me* Maths Equipment Overview' and individual lesson plans.
Inclusive Practices	• See Let's Strengthen and Let's Deepen suggestions throughout lesson plans. • See Unit 4 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed below.) • See Unit 4 Let's Strengthen PCM. • See Unit 4 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- This unit is a single-week block of content in October, and is the first of two Data units in 1st Class. This unit will focus primarily on tallies and pictograms. Unit 16 Data 2 will mainly be concerned with developing the topic of pictograms and introducing block graphs.
- This unit will require the children to use skills such as counting, skip counting, comparing, calculating and problem-solving throughout, consolidating their prior learning.
- Tally marks should be familiar to the children as they have encountered them as a way to represent numbers since the infant classes; however, the concept will be revised and consolidated.
- While the children have explored data displays using objects and simple graphs in Senior Infants, this is the first time they will encounter pictograms.
- Throughout the unit, record the children's work using photos and displaying the various data representations in the classroom.
- This unit will also revise and reinforce some of the work done previously on addition and skip counting in 5s.
- Applying the data investigation cycle is a very important part of the learning in this unit. As there is a Review and Reflect week immediately following this unit, the children can use some of this time to conduct further data investigations.

The theme of this unit is **Sustainability**. It is topical, it has a real-life context and it lends itself easily to data collection and recording.

Common misconceptions and difficulties

- The children may not understand the representation of 5 in tallies, mistaking 5 for 4 by not counting the oblique mark. The children may also count two individual tally marks as being the number 11, therefore counting 11 and not 2.
- The children may not be fluent in counting in 1s and 5s.
- The children may need support with the structure of pictograms: organisation, presentation, spacing of symbols, including a graph title, labels, a key, etc.

- The children may struggle with comparing, i.e. identifying how many more/fewer chose x than y.
- The children may need extra support with topic-specific language (e.g. graph, pictogram, symbol, label, title, key and data). The children may benefit from mini-flashcards or sticky notes displaying these terms, which they can place in their Pupil's Book.

The Unit 4 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

- Tally marks
- Pictograms
- Representations of various items within pictograms

Tally marks

Day 1, Lesson 1

Tallies

Focus of learning (with Elements)

- Explores and recognises different ways of collecting and representing data (U&C)
- Uses simple tallying for recording of data (U&C)

Learning experiences

- D Animation: Tallies *MAM* Routines: Reason & Respond, with Write-Hide-Show
- C Concrete activity: Maths Trail
- P Pupil's Book page 26: Tallies

Equipment

- Lollipop sticks
- PCM 16
- PCM 17

Maths language

- count, record, tally mark

Warm-up

D Animation: Tallies *MAM* Routines: Reason & Respond, with Write-Hide-Show

Play the animation and ask the children the following questions. Ask them to use their MWBs where appropriate. Tailor the questions to the children's responses. Use revoicing to promote inclusion and understanding.

- What are the characters doing?
- How can you win the game?
- What did each character do when the spinner showed their number? (Use the Maths Language Card for *tally mark* to explain or show.)
- What do you call a mark like that?
- Who won the game?
- How do you know?
- Did he have the most or the least tally marks?
- How many tally marks did he have?
- How did you count?
- How did he write the five tally marks?
- Did he do it the correct way? (Emphasise that it is okay to make mistakes. Demonstrate how to draw the oblique mark.)
- If that is how you record 5 with tallies, use your MWBs to show how you would record 10.

Tally mark for 5

- Write-Hide-Show a number between 5 and 20 on your MWBs using tally marks.
- How can we count using tally marks?

Let's strengthen

Some children may benefit from extra support with counting in 1s and 5s. See the Unit 4 Let's Strengthen Suggestions for Teachers.

Let's deepen

Some children will be ready to answer questions about Dara and Mia's game using the following language: *compare*, *How many more/less?*, *What's the difference?*

Main event

C P Concrete activity: Maths Trail

Display PCM 16: Maths Trail Recording Sheet on the IWB. Tell the children they will walk around the school/grounds/neighbourhood using their Maths Eyes to look for shapes. Ask:

Assessment Opportunity

- Can you predict what shapes you might see? Draw them or write their names on your MWBs.
- Where might you see these shapes?
- Which shape do you think you will find most of? Why?

- Which shape do you think you will find least of? Why?
- Can you see a shape in our classroom that is not a square, rectangle, circle or triangle?
- What name could we give to shapes that are not squares, circles, etc? (non-standard shapes, odd shapes, no-name shapes)
- What does a tally mark look like? Each time you see a shape, record it with a tally mark on your worksheet.
- If I saw three circles, how would I record that in tally marks? Show me on your MWBs.
- If I saw five squares, how would I record that in tally marks? Show me on your MWBs.

Distribute PCM 16 and ask the children to fill in the sheet while conducting the maths trail.

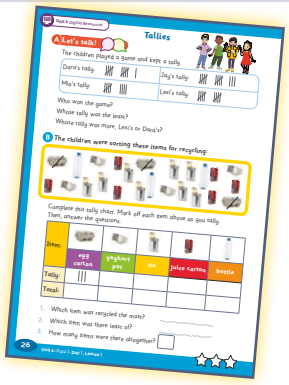
Teaching tip

The Maths Trail can take place indoors or outdoors. With the help of the SET, the children could be split into groups with a different starting point for each group to avoid crowding.

The children can do a seasonal walk using PCM 17: Tree/Leaf Trail Recording Sheet. Alternatively, the children choose which survey they would like to do. The topic of trees can be further linked to the topics of the environment and sustainability.

Take photos of some of the Maths Trail surveys and use them in the Review and Reflect lesson.

P Pupil's Book page 26: Tallies



Optional consolidation and extension possibilities

Games Bank Play 'Spin and Tally'.

Integration: Science: Variety and Characteristics of Living Things. Art Education: Leaf prints. Language: English: Read *Tally O'Malley* by Stuart J. Murphy, or listen to a reading at: edco.ie/6arb

Review and Reflect Use the Prompt Questions Poster.

Continue the Learning: The children record their attendance each morning with a tally mark on a large sheet of paper.

Home/School Links Book Page 12 can be completed at any stage after this lesson.

Day 2, Lesson 2

Surveys

Focus of learning (with Elements)

- Reads, interprets, poses questions about and discusses data displays such as concrete and visual charts (C)

Learning experiences

- C Concrete activity: The Sound of a Number
- C Concrete activity: Surveys
  MAM **Routine: Think-Pair-Share**
- P Pupil's Book page 27: Surveys

Equipment

- Jar or can
- 1c, 2c and 5c coins
- Photo of a compost bottle
- Photo of a bug hotel
- Paper with child's drawing and/or writing on both sides

Maths language

- survey, altogether

Warm-up

C Concrete activity: The Sound of a Number

The children close their eyes, listen, and count silently as you drop 1c coins (up to 20), one by one, into the jar. Ask/say:

- How many coins altogether? Can you show that number of coins in tally marks?
- How much money altogether?

Repeat with 2c coins. Ask:

- How many coins altogether? Can you show that number of coins in tally marks?
- How much money altogether? Can you show that amount of money in tally marks?
- Write the number pattern. (For example, for 2 × 2c coins it is 2, 4.)
- Continue the pattern to show one more 2c coins in the can/jar.

Repeat with 5c coins. Ask:

- How many coins altogether? Can you show that number of coins in tally marks?
- How much money altogether? Can you show that amount of money in tally marks?
- Write the number pattern. (For example, for 2 × 5c coins it is 5, 10.)
- Continue the pattern to show *one more* 5c coin in the can/jar.

Let's strengthen

Some children will benefit from using a number path and coins.

Main event

C Concrete activity: Surveys

***MAM* Routine: Think-Pair-Share**

In this activity, the children survey to find out which environmentally friendly activity they would like to carry out as a class. The survey will have two options.

Pose a question

First, pose a question. Choose (or the children choose) two options from the following range:

- Make a compost bottle
- Organise a class book swap (bringing books from home to swap)
- Build a bug hotel
- Make your own paper
- Grow edibles from seeds.

All these options are easily researched on the internet.

Make a plan

Offer two environmentally friendly options of your own (or the children's) choosing.

Help the children to plan. Ask:

- Will you work individually or in pairs?
- Where could you record the responses?
- How will you record the responses?
- How will you know which tally marks are for which activity?

Demonstrate on the IWB how the children can do this by drawing a line halfway down their MWBs and drawing a small picture in each half to show the two options. They can then draw the tally marks under the relevant picture.

Collect data

Each child or pair asks at least ten other children which option they would prefer. As the children work, conference with them to check for understanding of key concepts and language.

Analyse

Once the children have completed their surveys, choose some surveys to present to the class. Taking the example of a bug hotel or a compost bottle, use Think-Pair-Share to ask:

- What questions could we ask about this survey?

Prompt the children with questions such as:

- What do we know?
- Have all who answered chosen the same activity or different activities?
- How do you know how many have chosen the compost bottle?
- How many have chosen the bug hotel/compost bottle?

Compare

- Which did most children choose – the bug hotel or the compost bottle?
- How many more children chose the bug hotel/ compost bottle?
- How many less children chose the bug hotel/ compost bottle?

- Is there a lot less? Can you make an estimate of how many less?
- How could we find out how many children took part in the survey altogether?

Conclusion

- Which activity has the group chosen to do?

Teaching tip

Take a photo of the survey results to use in the Review and Reflect lesson.

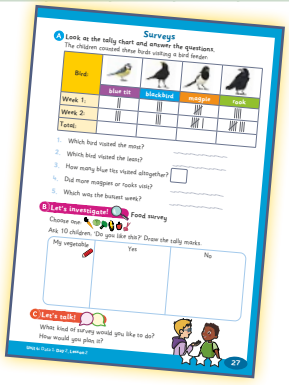
Let's strengthen

Ask some children to discuss the survey options with the SET in advance of the lesson so they can participate with confidence.

Let's deepen

Some children will be comfortable surveying a larger group than ten (even the whole class).

P Pupil's Book page 27: Surveys



Optional consolidation and extension possibilities

Games Bank Play 'Rock, Paper, Scissors Tally'.

Continue the Learning Set up an A3 poster with the headline 'Daily Data' and the survey question: *Do you know what* ♻ *means?*

Continue the Learning Display the recycling symbol on the board. Ask: 'Did you recycle today?' Add a box for Yes and a box for No. As the children leave school, they add a tally mark to the Yes or No box.

STEM Carry out one of the environmentally friendly activities surveyed.

Review and Reflect Use the Prompt Questions Poster.

Day 3, Lesson 3

Symbols

Focus of learning (with Elements)

- Reads, interprets, poses questions about and discusses data displays such as concrete and visual charts (e.g. pictograms) (C)
- Recognises that data symbols hold and/or represent information or numerical value (U&C)

Learning experiences

- D Digital activity: Tally Marks
  ***MAM* Routines: Quick Images, with Write-Hide-Show**
- D Digital activity: The Bug Hotel
  ***MAM* Routines: Notice & Wonder; Reason & Respond**
- C Concrete activity: Building a Pictogram
  ***MAM* Routine: Think-Pair-Share**
- P Pupil's Book page 28: Symbols

Equipment

- PCM 18

Maths language

- reasonable, unreasonable, how many?, data, pictogram, row, column

Warm-up

D Digital activity: Tally Marks *MAM* Routines: Quick Images, with Write-Hide-Show

Play the Quick Images slideshow, which shows a series of different tally marks. Click to briefly reveal and then hide each image. Ask the children to write the number/amount shown on their MWBs and to reveal their proposed answer when called upon. Record all the proposed answers on the board (ensuring you do not give any undue weight to the correct answer) and ask:

- Which answer are you going for?
- What proof do you have?
- Does anybody have different proof?
- Are there any written answers that are the same amount (same value, different appearance)?

If any unreasonable answers are suggested, ask:

- Are there any answers that are unreasonable/unlikely because they do not make sense?
- Which ones?
- Why do you think this?

Reveal the images once again and ask:

- How many?
- How did you count?
- How did the tally marks for 5 help you count?

Main event

D Digital activity: The Bug Hotel *MAM* Routines: Notice & Wonder; Reason & Respond

Display the poster. Ask the children to use their Maths Eyes when answering the following questions.

- What do you think is happening here?
- What do you think the survey question is?
- What choices were there?
- Do you know what information collected in a survey is called? (data)
- Did everyone surveyed make the same choice?
- Why are these tally marks in front of the picture of the bug hotel?
- Why are these tally marks in front of the compost bottle?
- How many chose the bug hotel activity?
- How many chose the compost bottle activity?
- How many more/less chose the compost bottle activity?

C Concrete activity: Building a Pictogram
***MAM* Routine: Think-Pair-Share**

Tell the children that you are going to show them how to represent the data in a different way using pictograms. Using Think-Pair-Share, ask:

- If I am making a pictogram to show the data in the poster, what do you think I will need? (pictures)

Tell the children that the pictures can be symbols. Explain that symbols give information but have less detail than pictures. They are like logos. Symbols keep it simple!

Using Think-Pair-Share for each question, ask:

- What logos do you know?
- What does this symbol tell you? (Show the recycling symbol on the IWB.)
- What information does this symbol give you? (Show the children crossing symbol on the IWB.)
- What information does this symbol give you? (Show the weather symbol on the IWB.)

Continue to use Think-Pair-Share for each of the following questions, but ask the children to draw their ideas before they share:

- What symbol could I use for a bug hotel?
- What symbol could I use for a compost bottle?

Using PCM 18: Building a Pictogram, call up the relevant number of children. Give each child a picture of a bug hotel or a compost bottle, as per the poster. Invite the children to place their symbols on the board. Depending on how the children do so, elicit advice from the other children as to how the pictogram could be best organised.

- How can we arrange the data we have collected so that it is easy to 'read'?

Lead the discussion so that the children understand that the best way to organise the pictures is in columns or rows.

- Now, let's check what information the data can give us.
- What does one picture of a compost bottle in the pictogram tell us? (that one child chose that option)
- What does one picture of a bug hotel in the pictogram tell us?
- How many chose the bug hotel?
- How do you know?
- How did you count?
- How many chose the compost bottle?
- How do you know?

- How did you count?
- Was the number of children who chose the bug hotel more or less than the number who chose the compost bottle?
- How many more/less chose the bug hotel?
- How many more/less chose the compost bottle?
- How many altogether took part in the survey?

Teaching tip

Take a photo of the pictogram for the Review and Reflect lesson.

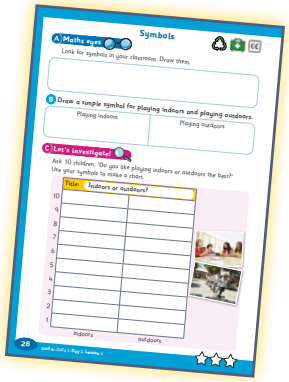
Let's strengthen

Go on a symbol hunt around the school and grounds.

Let's deepen

Ask some children to make a pictogram from the contents of their pencil case. (See the Unit 4 Let's Deepen PCM.)

P Pupil's Book page 28: Symbols



Optional consolidation and extension possibilities

Continue the Learning Set up an A3 poster with the headline 'Daily Data', a picture of the Green Schools symbol (or another symbol of your choosing) and the survey question: 'Do you know what this symbol means?'

As the children come into school, they add a tally mark to the Yes or No side of the survey.

Continue the Learning: Make this statement to the children: 'There is litter in outer space.' Ask for a Yes or No response. Record the responses with a simple, hand-drawn pictogram. Ask the children for ideas as to how data could be collected to prove or disprove that there is litter in outer space. How could data be collected to prove or disprove that there is litter in the classroom?

Maths Journal Ask the children to record information under this heading: Something new I learned today.

Integration Language: English: Read a book promoting environmental awareness, such as *The Watcher* by Jeanette Winter. Art Education: Design a symbol.

Review and Reflect Use the Prompt Questions Poster.

Day 4, Lesson 4

Pictograms

Focus of learning (with Elements)

- Recognises that data symbols hold and/or represent information or numerical value (U&C)
- Reads, interprets poses questions about and discusses data displays such as concrete and visual charts (e.g. pictograms) (C)

Learning experiences

C Concrete activity: Forwards and Backwards Counting to/from 30 ***MAM* Routine: Choral Counting**

D Digital activity: Slow-Reveal Pictogram ***MAM* Routines: Notice & Wonder; Reason & Respond, with Think-Pair-Share**

P Pupil's Book page 29: Pictograms

Equipment

- Bags
- Interlocking cubes or counters

Maths language

- There is no new maths language for this lesson.

Warm-up

C **Concrete activity: Forwards and Backwards Counting to/from 30**
***MAM* Routine: Choral Counting**

See it, then say it! Using the 100 square (first 30 squares only) on the inside front cover of their Pupil's Book, ask the children to practise counting forwards and backwards to and from 30. Say:

- Clap on each count forwards.
- Tap for each count backwards.

Change from backwards to forwards, and vice versa, within the count.

As the children get more confident and competent, challenge them further.

- Ask them to count forwards from different starting points.
- Ask them to count backwards from different starting points.
- Ask them to skip count forwards and backwards in 2s and 5s.
- Ask: In real life, do you skip count anything in 2s and 5s?

Let's strengthen

Some children may benefit from marking/highlighting, on their 100 square or on number stacks to 30 (see PCM 10), the multiples of 2 and 5 for use during Choral Counting.

Let's deepen

Challenge the children to count beyond 30.

Main event

D **Digital activity: Slow-Reveal Pictogram**
***MAM* Routine: Notice & Wonder; Reason & Respond, with Think-Pair-Share**

Display the slideshow. Stay on the first slide and ask:

- What do you notice?
- What do you wonder?

Then click through each slide in the slideshow until the whole pictogram has been revealed.

Using Think-Pair-Share, ask the children the following questions, which can be tailored to suit their responses to Notice & Wonder:

- What do we call this?
- Why is it called a pictogram?
- What does the picture of a single teddy bear/board game/skipping rope tell you?
- What data do we know from it?
- How many teddies/skipping ropes/board games/books were recycled?
- Were more teddies than skipping ropes recycled?
- How do you know?
- How many more?
- Were less games than books recycled?
- How do you know?
- How many?
- How many items were recycled altogether?

Here is some more data: Monty found four balls for recycling. Show that on your MWBs.

Teaching tip

When completing the Pupil's Book, the children draw their own symbols for completing the pictogram. Conference with the children – some may write/draw the name of the clothing and then use one symbol (e.g. the recycling symbol) to represent each item of clothing. Other children may draw individual symbols for each category of clothing. Draw attention to these options.

Let's strengthen

The children may need to see the pictogram template in the Pupil's Book enlarged. They may need the Unit 4 Let's Strengthen PCM for cutting and pasting symbols. Some children might like to use the recycling symbol.

Let's deepen

Ask the children to represent the same data using a horizontal pictogram model.

P **Pupil's Book page 29: Pictograms**

Optional consolidation and extension possibilities

Maths Eyes Go on a classroom or school hunt for the recycling symbol and the deposit return scheme symbol.

Continue the Learning Set up an A3 poster with the headline 'Daily Data' and the survey question: 'Which do you use – a reusable water bottle or a plastic water bottle?' As the children come into school, they add a tally mark to the relevant side of the survey.

Continue the Learning Make this statement to the children: 'Everyone in this class came to school by car this morning.' Ask for a Yes or No response. Record the responses with a simple, hand-drawn pictogram. Ask the children for ideas as to how data could be collected to prove or disprove that everyone in the class travelled to school by car.

Games Bank Play 'Domino Pictograms'.

Let's Deepen Use the Unit 4 Let's Deepen PCM.

Review and Reflect Use the Prompt Questions Poster.

Day 5, Lesson 5

Review and Reflect

Focus of learning (with Elements)
• Reviews and reflects on learning (U&C)

Warm-up

Carry out a warm-up activity of your choice from one of the lessons in this unit.

Main event

Choose from this menu of activity ideas, or choose your own way to best structure this last lesson to suit your needs and the needs of your class.

Let's talk!	Let's play!
For Review and Reflect, use photographs and videos of the children engaged in activities. Select some of the children to work in groups to reflect and then give feedback to the class as a whole, using Think-Pair-Share.	Allow the children to choose one of these games from the Games Bank: 'Domino Pictograms', 'Rock, Paper, Scissors Tally' or 'Spin and Tally'.
Maths language	**Maths stations**
Ask the children to explain the following terms (perhaps using examples or drawings on MWBs): tally, tally mark, symbol, pictogram, data, survey. Use the maths language cards for this unit to revise the key terms. For example: If the image and text are cut apart, can the children match them?	Set up Maths stations. Provide each station with a bag/box containing a mixed counting collection (e.g. bears, 2-D shapes, counters and cubes of various colours). Ask the children to think of at least two different sorting rules to sort and make a pictogram. Sorting options can be by: item type (bear/counter/cube/shape); item colour; flat/not flat, etc.

Progress Assessment Booklet	Maths eyes
Complete Questions 14–18 on page 12. Alternatively, these can be left to do as part of a bigger review during the next review week.	The children go on a symbol hunt at home. They take photos of the symbols to display and discuss.
Let's strengthen	**Let's deepen**
Identify children who might benefit from extra practice with some of the key concepts or skills in this unit. Use the Unit 4 Let's Strengthen PCM. Consult the Unit 4 Let's Strengthen Suggestions for Teachers.	Use the Unit 4 Let's Deepen PCM.

Notes