Maths and Me: 1st Class – Short-Term Plan, Unit 7: Numbers to 100 (December: Weeks 1&2)

Strand(s) > Strand unit(s)	Number > Numeration and Counting; Place Value and Base Ten; Sets and Operations. Algebra > Expressions and Equations.
Learning Outcome(s)	Through appropriately playful and engaging learning experiences children should be able to demonstrate proficiency in using and applying different counting strategies; understand that digits have different values depending on their place or position in a number; use estimation to quickly determine number values and number calculations; interpret the meaning of symbols or pictures in number sentences; select, make use of and represent a range of addition and subtraction strategies.

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	**Counting:** Counts to at least 100, counting fluently across decades (U&C); Explains and justifies choices of counting strategies used, and compares with the choices of others (C)		D P C Choral Counting L1–3 D Notice & Wonder L1, 4 D Think-Pair-Share L1, 4–7 D Three-Act Task L1 D Reason & Respond L2, 4–7 D C Write-Hide-Show L2, 4–7 D Would This Work? L3–5 D C Build it; Sketch it; Write it L3–4 D Quick Images L4–5 D Greater Than or Less Than L5 D Concept Cartoon L6 D I Do, We Do, You Do L6 C Number Hunt in a Toy Catalogue L7 C P Number Hunt Outdoors L7 **Print resources** Pupil's Book pages 45–51 Home/School Links Book pages 18–19 PCM 32	**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 pages 15–16
2	**Counting Groups:** Skip counts multiples of twos, fives and tens from a given multiple using verbal, concrete and pictorial supports (U&C); Uses skip counting to extend number patterns (A&PS)			
3	**Representing Numbers:** Models 2-digit numbers (C)			
4	**Tens and Ones:** Demonstrates an ability to estimate various arrangements or models of numbers to 99 (U&C); Models, represents and describes 2-digit numbers in terms of tens and ones (C); Composes and decomposes the structure of 2-digit whole numbers up to at least 99 (U&C)			
5	**Comparing and Ordering Numbers:** Compares two 2-digit numbers and represents the relationship between these numbers using <, > and = (U&C); Orders 2-digit numbers (for example: from least to most, most to least) (R)			
6	**Estimating Numbers:** Investigates the efficiency of different estimation strategies, including rounding numbers to the nearest ten (R)			
7	**Number Hunts:** Identifies and recognises 2-digit numbers in the environment (U&C); Explores a range of tasks including games, puzzles and real-life contexts involving 2-digit numbers (A&PS)			
8	**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 7 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 7 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed on the next page.) • See Unit 7 Let's Strengthen PCM. • See Unit 7 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- The overarching theme of The Toy Shop has been carefully chosen as it is likely to be very engaging for the children given the time of year (i.e. first two weeks of December) while also providing other examples of how maths is relevant to them (see the Maths Eyes activities in the unit).
- As done in Unit 1, to enable the children to make rich and meaningful connections between learning experiences in different Strand Units, this unit combines learning experiences primarily from Numeration and Counting, Place Value and Base Ten. In addition (although to a lesser extent), Sets and Operations, and Expressions and Equations are present.
- The progression continua statements for this unit largely refer to skills relating to two-digit numbers up to 99. This unit revises the content of Unit 1 Numbers to 30 and extends it to apply to numbers beyond 30, up to 100.
- As mentioned in Unit 1, consider incorporating a quick 1–2-minute counting practice (forwards, backwards, various starting points and/or intervals), focused on a range appropriate to the needs of your class/group, as part of your daily routine, both within and outside maths lessons. For example, you could have brief counting sessions as part of morning welcome, transitions between lessons, en route to the PE hall or yard, while children are tidying up after breaks and/or when they are going home.
- Counting collections: For the children to embed their counting skills, they need to experience meaningful counting with a purpose, i.e. counting things. Ensure that there are plenty of inexpensive materials available in advance that allow the children to count sets of between 30 and 100 objects. Suitable materials include: jigsaw puzzle pieces, bottle tops (or other similar recyclable materials), marbles, buttons, elastic bands, paper drinking straws, lollipop sticks, metal washers, craft supplies (e.g. pipe cleaners, small pompoms, beads, art sequins, wiggly eyes), pieces of pasta (e.g. bows, penne, fusilli), paper clips and paper fasteners. Try to strike a balance between materials that are exciting to count and materials that are distracting. While items such as collector/trading cards can be fun to count, they may also distract children from the task.
- As mentioned in Unit 1, and in keeping with the new PMC 2023, *Maths and Me* uses the terminology 'tens and ones'. However, it is beneficial to explain to the children that the terms 'units' and 'ones' are interchangeable, especially since the children are likely encounter the term 'units' elsewhere.

The theme of this unit is **The Toy Shop**.

Common misconceptions and difficulties

Many of the common misconceptions and difficulties highlighted in Unit 1 Numbers to 30 (see pages 25–26) are also applicable here.

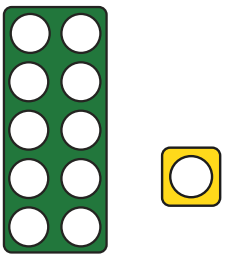
In addition to those mentioned in Unit 1, below are some common misconceptions and difficulties.

- The children may require further practice counting within 30 before progressing to counting within 100.
- The children may struggle to count forwards from any random number.
- The children may count forwards comfortably, and yet struggle to count the same range backwards.
- The children may confuse some of the 'teen' numbers with similar sounding 'ty' numbers (e.g. sixteen and sixty, seventeen and seventy).
- The children may struggle with crossing decades. When counting aloud, for example, they may incorrectly say: '... 58, 59, 70, 71...'.
- The children may confuse the tens and ones places. For example, they might incorrectly build 83 as 3 tens and 8 ones, or write a representation of 5 tens and 2 ones as 25.
- The children may incorrectly bundle/compose 9 or 11 items/ones together as a 'ten'.
- They children may incorrectly record numbers on a place value grid or branching bond. For example, they might show 56 as 50 tens and 6 ones, or 56 = 5 + 6.
- The children may not recognise that any number can be partitioned in multiple ways, e.g. 26 as: 2 tens and 6 ones, 1 ten and 16 ones, 0 tens and 26 ones, and so on. This is a foundational concept leading to regrouping/decomposing tens for the purpose of subtraction.
- The children may incorrectly compare ones to determine if a number is smaller/greater, as opposed to looking to tens first.
- The children may not appreciate how their ability to subitise can be used as part of the initial visual comparison of numbers.
- The children may order numbers in the opposite order to that asked, e.g. order numbers in ascending order when asked to order starting with the greatest number.
- The children may confuse the less than (<) and greater than (>) symbols. They may also misinterpret the equals to (=) symbol as 'and the answer is'.
- The children may incorrectly assume that a number is always rounded to the lower multiple of ten.

The Unit 7 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

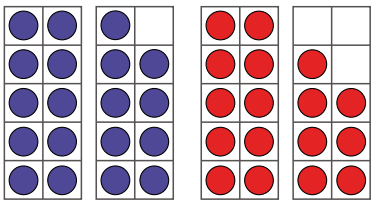
Mathematical models and representations

- Assorted countable resources in the classroom
- Ten frames and counters
- Number shapes
- Interlocking cubes
- Base ten blocks
- Quick cubes
- 100 squares
- Number paths
- Number lines
- Lollipop/bundling sticks
- Rekenreks
- Branching bonds (an example of part–whole models)
- Place value grids
- Place value arrow cards



Number shapes

Open number line



Ten frames and counters

Teaching tip

Ten Frames, Number Shapes, Base Ten Blocks, 100 Square, Number Path, Number Line, Branching Bonds and Place Value Grid manipulative printables are available to support this unit. Click on the resources icon on the *Maths and Me* book cover on **edcolearning.ie**

Teacher note: Throughout this unit, incorporate estimation wherever appropriate. Encourage the children to consider the 'reasonableness' of their estimations and answers (i.e. unreasonable is when they are far too big or far too small). It may also be useful to provide visual benchmarks for reference. Ask/say:

- If this container holds 50 bears, how many do you think we have in our Estimation Station?

Day 1, Lesson 1

Counting

Focus of learning (with Elements)

- Counts to at least 100, counting fluently across decades (U&C)
- Explains and justifies choices of counting strategies used, and compares with the choices of others (C)

Learning experiences

- (P) Counting Beyond 30
  ***MAM* Routine: Choral Counting**
- (D) Digital activity: The Toy Shop (1)
  ***MAM* Routines: Notice & Wonder, with Think-Pair-Share**
- (D) Animation: Ball Pit
  ***MAM* Routine: Three-Act Task**
- (P) Pupil's Book page 45: Counting

Equipment

- Classroom resources for counting, such as jigsaw puzzle pieces, marbles, buttons, elastic bands, paper drinking straws, lollipop sticks, metal washers, craft supplies (e.g. pipe cleaners, small pompoms, beads, art sequins, wiggly eyes), pieces of pasta, paper clips, paper fasteners.
- Counting aids, such as 100 squares and number lines
- PCM 32

Maths language

- numbers: zero, one, two, three... one hundred, count (up/forwards/back/backwards), ones (units), tens, estimate, reasonable

Warm-up

Teaching tip

Throughout this entire unit, adjust and/or choose numbers and amounts appropriate to the strengths and needs of the children, e.g. some may benefit from working with smaller quantities, and others may comfortably rise to the challenge of larger amounts. Please also see the Let's Strengthen and Let's Deepen suggestions throughout.

(P) Counting Beyond 30

***MAM* Routine: Choral Counting**

- Ask the children to start counting forwards in ones from 20. Pay particular attention to what they say after '29, 30...'. Can they confidently count beyond 30?
- **See it, then say it!** Using the 100 square on the inside front cover of their Pupil's Book, ask the children to count forwards/backwards from two numbers of your choosing. Ask them if they can spot any patterns.

Repeat as required.

Let's deepen

As the children become more confident and competent, challenge them further by asking them to count forwards from various starting points without the aid of the 100 square. Then, ask them to count backwards from various starting points without the aid of the 100 square.

Teaching tip

Choral Counting is the warm-up for the first three lessons. To emphasise the importance of oral counting, it could also be part of the warm-up to every lesson in this and subsequent units. For variation, incorporate other strategies, e.g. the sound of a number, a counting stick.

Main event

D Digital activity: The Toy Shop (1) ***MAM*** **Routines: Notice & Wonder, with Think-Pair-Share**

Display the poster and, using Think-Pair-Share, click to play or ask:

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

Record the children's responses to both questions on the board. Allow the children the opportunity to respond to (agree/disagree with or query) others' responses, but do not confirm or reject any of the ideas. Note any 'wonderings' that could become the basis for a subsequent maths investigation.

If the children have not discussed it already, ask:

- What do you think this unit is about?

D Animation: Ball Pit ***MAM*** **Routine: Three-Act Task**

Act 1: Notice & Wonder

Play the animation, in which a toddler in a ball pit repeatedly throws out the balls onto the floor until there are a small number left. Ask the children:

Assessment Opportunity

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

Record the children's responses to both questions on the board. Allow the children the opportunity to respond to (agree/disagree with or query) others' responses, but do not confirm or reject any of the ideas.

- (Reveal the focus questions.) How many balls are on the floor? How many balls are left in the ball pit?

Act 2: Productive Struggle

Click to play or ask:

- Write an estimate that is too high on your MWB.
- Write an estimate that is too low.
- Write a reasonable estimate.

The children work in pairs or small groups to answer the focus questions. If necessary, prompt them by asking:

- Do you have enough information? What else do you need to know?

Enable the children to explain that they need to know how many balls were in the pit at the start and how many were thrown out, in order to know how many are left in the pit. Once they explain this, play the next part of the animation and/or distribute to each group/pair, a copy of PCM 32: Ball Pit (a black and white image of the play balls scattered on the floor). The children count the balls on the PCM. Ask them to consider how they might organise their count to do it in an efficient way. Then click to play or ask:

- What information do you have now?
- To get an answer, what needs to be done?
- What strategies can you use?

Using Build it; Sketch it; Write it, the children choose their own preferred way to mathematically model their strategies/solution(s).

Act 3: The Big Reveal

The children share and discuss their strategies, solutions and models. Click to play or ask:

- What answer did you get?
- How did you get that answer?
- What was difficult? What was easy?

Play the final part of the animation, which reveals the balls organised into groups of 10, with the numeral given beside each group (i.e. 10, 20, 30... 90, 91, 92...). Click to play or ask:

- Is this the answer that you expected? Why or why not?
- What 'I wonder' questions did you answer?
- Do you have any new 'I wonder' questions?

Let's strengthen

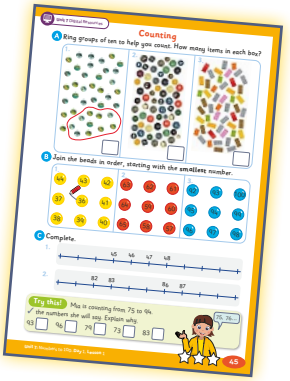
Children may benefit from materials to support counting, e.g. the 100 square on the inside cover of their Pupil's Book, number paths, or number lines.

Let's deepen

Challenge the children to subitise multiple groups of 10. For example: Ask them to recognise that 3 groups of 10 (or 4, or 5... groups of 10) is 30 (or 40, or 50...), without counting each group individually (i.e. '10, 20...').

Challenge the children to suggest other ways they could group the balls to count them. Ask which way would be most efficient.

P Pupil's Book page 45: Counting



Optional consolidation and extension possibilities

Integration English: Language and vocabulary development using the theme of Toys, Shopping. Gaeilge: An téama Ag Siopadóireacht. Geography: Local environments, towns, the shopping centre. History: Continuity and change, toys and games of the past. STEM: Using various toys or toy-like resources to investigate concepts such as energy and forces, and computational thinking (e.g. toy cars on ramps, BeeBots, Lego SPIKE), designing and making towers, bridges, rollercoasters, marble runs, etc.

Let's Strengthen The children may benefit from extra practice counting within 30 initially, and/or distinguishing between -ty and -teen numbers. Consult the Unit 7 Let's Strengthen Suggestions for Teachers.

Counting Collections Using various countable resources in the classroom, the children take a handful, count how many and record the total on their MWBs.

Estimation Station Fill a transparent container with less than 100 small items from the classroom. Leave a box close by where children can 'post' their estimates. After two or three days, ask a group to count the items and identify who had the closest estimate. The children can then set up the station again with more/less items or different items.

Review and Reflect Use the prompt questions in the Review and Reflect Poster.

Days 2 and 3, Lesson 2

Counting Groups

Focus of learning (with Elements)

- Skip counts multiples of twos, fives and tens from a given multiple using verbal, concrete and pictorial supports (U&C)
- Uses skip counting to extend number patterns (A&PS)

Learning experiences

- (D) Digital activity: Skip Counting in 2s, 10s and 5s (A)
  ***MAM* Routine: Choral Counting**
- (C) Concrete activity: Counting in 2s, 10s and 5s ***MAM* Routine: Choral Counting**
- (D) Digital activity: The Toy Shop (1)
  ***MAM* Routines: Reason & Respond, with Write-Hide-Show**
- (P) (C) Pupil's Book page 46: Counting Groups

Equipment

- Countable resources
- Empty container per group
- Counting aids, such as 100 squares or number lines

Maths language

- twos, fives, tens, total amount

Teaching tip

Counting large collections of objects is an essential learning experience, but it can be time-consuming. Therefore, this lesson has been allocated two days.

Warm-up

Teacher note: In Senior Infants, the children learned to skip count to 10. In Unit 1 of 1st Class, they covered skip counting in 2s and 5s.

D Digital activity: Skip Counting in 2s, 10s and 5s (A) *MAM* Routine: Choral Counting

(This activity is recommended on Day 2.)

See it, then say it! Display the Skip Counting in 2s (A), Skip Counting in 10s (A) and Skip Counting in 5s (A) PowerPoint presentations. The children count aloud along with the text/images. Ask them if they can spot any patterns. Repeat as required.

Teaching tip

When counting in 2s, prompt the children to identify the collective name given to these numbers (even) and the name given to the numbers being skipped over (odd).

Let's deepen

Split the class into two (or more) groups. One group starts the count, and, upon a signal from the teacher, the other group takes over. Continue, moving from one group and back to the other. This encourages the children to concentrate and listen better.

C Concrete activity: Counting in 2s, 10s and 5s *MAM* Routine: Choral Counting

(This activity is recommended on Day 3.)

See it, then say it! Without revealing it to the children, decide to count in 2s, 10s or 5s, as appropriate to the strengths and needs of the children. On the board, record the first five multiples.

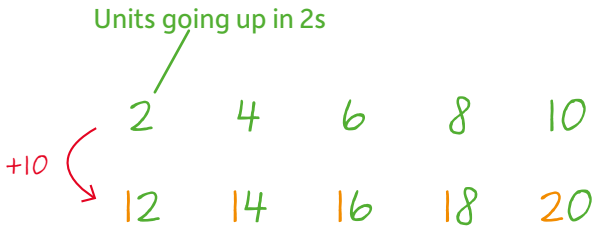
Pause and ask:

- What comes next? How do you know?
- What patterns do you spot?

Continue by adding the next terms underneath.

Teaching tip

Record the numbers as horizontal lines of 5 (or 10), so that patterns within the numbers are more noticeable (e.g. see image below). Use different colours to record and highlight the patterns that the children notice. Pause the count at strategic moments to encourage discussion and thinking.



Let's deepen

As the children become more confident and competent, challenge them further by starting on:

- A number other than the first multiple
- A suitable multiple and counting backwards
- A number between 30 and 100.

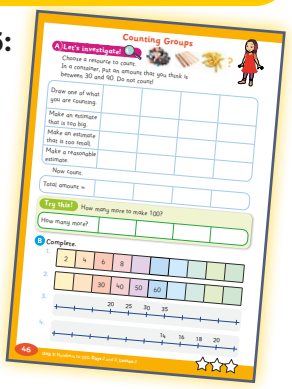
Main event

D Digital activity: The Toy Shop (1) *MAM* Routines: Reason & Respond, with Write-Hide-Show

Display the poster from Lesson 1. Ask the children to use Write-Hide-Show on their MWBs to respond to the following questions. Click to play or ask:

- How many packs of trucks are there?
- How many trucks is that? How do you know?
- How many packets of crayons are there?
- How many crayons is that? How do you know?
- How many packets of batteries are there?
- How many batteries is that? How do you know?
- How many cars are there? How do you know?
- How many jigsaw pieces in one box?
- How many jigsaw pieces in two boxes? How do you know?
- What other 'how many' questions could you ask?

P C Pupil's Book page 46: Counting Groups



Activity A: *Let's investigate!* Allow each group to choose a collection of countable resources to have at their table. Distribute a large empty container to each group. Say:

- Pour/place into the empty container an amount of resources that you think is between 30 and 90.
- Draw the resource that you chose (in the first column).

- Write an estimate that is too big.
- Write an estimate that is too small.
- Write a reasonable estimate.

When ready, ask the children to count their resources and write the number in the 'count' part of the table.

Extra: Ask the children to count orally from the number in the 'count' part of the table to 100.

Let's deepen

Challenge the children to count back from 100 to this number.

Repeat the activity up to four times by rotating the collections of resources between groups.

Take note of the counting strategies being used. If the children are not using efficient strategies (e.g. making groups of 2, 5 or 10), prompt them to reconsider their strategy.

Let's strengthen

The children may benefit from choosing an initial amount of resources that is less than 50.

Let's deepen

Try this! Challenge the children to calculate how many more are needed to make 100.

Optional consolidation and extension possibilities

Strategy Wall Add the Calculation Strategy Wall Card for Counting in Groups to the class Strategy Wall. Refer to it throughout this and subsequent units. The children could also add their own sketches of this strategy, both to the Strategy Wall and in their Maths Journals.

Counting Collections Set up containers or bags labelled A, B, C, D, etc. Add a collection of objects to each (e.g. A contains beads, B contains buttons, C contains paper clips). In pairs or small groups, the children take a collection, count it and record the amount in their copy or on their MWBs. After a set amount of time, the pairs/groups confer to compare the totals they got for each labelled collection.

Games Bank Play 'Four Throws to 100'.

Story Read *The King's Commissioners* by Aileen Friedman, or listen to a reading at: edco.ie/w5u5

Estimation Station Remind the children to submit estimates, count the items and/or set up a new station.

My Maths Fact File The children could complete the My Maths Fact File (Pupil's Book page 120 and top of page 121) if they have not already done so during Unit 1.

Review and Reflect Use the prompt questions in the Review and Reflect poster.

Home/School Links Book Page 18 can be completed at any stage after this lesson.

Day 4, Lesson 3

Representing Numbers

Focus of learning (with Elements)

- Models 2-digit numbers (C)

Learning experiences

- (D) Digital activity: Skip Counting in 2s, 10s and 5s (B) ***MAM* Routine: Choral Counting**
- (D) Digital activity: Representing 92 ***MAM* Routines: Would This Work?, with Build it; Sketch it; Write it**
- (C) Concrete activity: Representing Two-digit Numbers ***MAM* Routine: Build it; Sketch it; Write it**
- (P) Pupil's Book page 47: Representing Numbers

Equipment

- Countable resources
- Any available physical resources for representing numbers up to 100, including: ten frames and counters, lollipop/bundling sticks, interlocking cubes, links, number shapes, number rods, rekenreks, base ten blocks
- Counting aids, such as 100 squares and number lines

Maths language

- There is no new maths language for this lesson.

Warm-up

D Digital activity: Skip Counting in 2s, 10s and 5s (B) ***MAM* Routine: Choral Counting**

Depending on the needs of the children, you might wish to reinforce 2s, 10s, and/or 5s. Display the Skip Counting in 2s (B), Skip Counting in 10s (B) and/or the Skip Counting in 5s (B) PowerPoint presentations. The children count aloud along with the text/images. Ask them if they can spot any patterns. Repeat as required.

Main event

D Digital activity: Representing 92
***MAM* Routines: Would This Work?, with Build it; Sketch it; Write it**

First, ask the children to demonstrate various ways to represent the number 92 using Build it; Sketch it; Write it.

Click on each character to reveal the strategy they used to represent 92.

Encourage the children to identify whether or not the representation is accurate, and to justify their reasoning. If the representation is not correct, can the children suggest how it might be changed to make it correct?

C Concrete activity: Representing Two-digit Numbers ***MAM* Routine: Build it; Sketch it; Write it**

In pairs/groups, ask the children to represent various numbers (from 30 to 100, including numbers ending in zero), using at least one mathematical model in each of the three categories below.

Assessment Opportunity

- Build it! Can you use classroom resources to represent the number? Show us.
- Sketch it! Can you represent the numbers as a sketch? Show us.
- Write it! Can you use words, branching bonds or number sentences to represent the number? Show us.

Optional: Following this task, create a 2-D and/or 3-D display for a particular number (e.g. 85), illustrating all the different ways to represent that number. This display could be changed regularly to represent other numbers and could be incorporated with, or become, a Number of the Day activity.

Teaching tip

In their Maths Journals, the children could use images/words to record what they built, sketched or wrote.

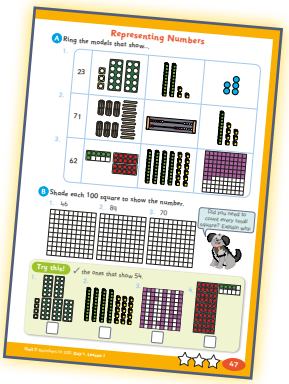
Let's strengthen

Some children may struggle with 'Write it' and should be allowed to build and/or sketch only.

Let's deepen

Challenge the children to express the number using word form and/or non-canonical arrangements (e.g. 70 + 15 or 60 + 25 for 85).

P Pupil's Book page 47: Representing Numbers



Let's strengthen

For consolidated learning, the children complete the tasks on the Unit 7 Let's Strengthen PCM.

Optional consolidation and extension possibilities

Place Value Display Set up (or add to) a classroom Place Value Display. Include representations of numbers, images of numbers sourced in print media and online, as well as appropriate labels (see the Unit 7 Maths Language Cards). The children could contribute samples of their own work from this lesson and label them. This display could also include the Estimation Station (see below).

Games Bank Play 'Four Throws to 100'.

Story Read *100 Days of Cool* by Stuart J. Murphy, or listen to a reading at: edco.ie/7tu6

Estimation Station Remind the children to submit estimates, count the items and/or set up a new station.

Review and Reflect Use the prompt questions in the Review and Reflect poster.

Day 5, Lesson 4

Tens and Ones

Focus of learning (with Elements)

- Demonstrates an ability to estimate various arrangements or models of numbers to 99 (U&C)
- Models, represents and describes two-digit numbers in terms of tens and ones (C)
- Composes and decomposes the structure of two-digit whole numbers up to at least 99 (U&C)

Learning experiences

- (D) Digital activity: How Much Is Here? (1) ***MAM* Routines: Quick Images, with Write-Hide-Show**
- (D) Digital activity: Collector Cards ***MAM* Routines: Notice & Wonder; Reason & Respond, with Think-Pair-Share**
- (D) (C) Digital activity: Tens and Ones ***MAM* Routine: Would This Work?**
- (C) Concrete activity: Representing Two-digit Numbers ***MAM* Routine: Build it; Sketch it; Write it**
- (P) Pupil's Book page 48: Tens and Ones

Equipment

- Countable resources
- Any available physical resources for representing numbers up to 100, including: ten frames and counters, lollipop/bundling sticks, interlocking cubes, links, number shapes, number rods, rekenreks, base ten blocks
- Counting aids, such as 100 squares and number lines
- Place value arrow cards

Maths language

- one- or two-digit, 'teens', place value

Teaching tip

Representing numbers as tens and ones, including constructing and deconstructing these arrangements, can be a difficult concept for children to grasp. These children may need to explore concrete activities for longer and/or revisit concrete activities as difficulties arise. See the Unit 7 Let's Strengthen Suggestions for Teachers and the Let's Strengthen tips in the Main Event section.

Warm-up

(D) **Digital activity: How Much Is Here? (1) *MAM* Routines: Quick Images, with Write-Hide-Show**

Briefly reveal and then hide the image(s). Ask the children to record the total on their MWBs. Next, ask them to show their answers, and record these on the board. Be careful not to confirm the correct answer. Ask/say:

- Are there any answers that are unreasonable/not likely because they do not make sense? Which ones? Why do you think this?
- Which answer do you agree with?
- Explain the strategy you used to get your answer.
- Did anybody use a different strategy?

When there are no new strategies to discuss, reveal the image again and confirm the answer, using a variety of possible strategies.

Teaching tip

There are six slides in this activity. It is not necessary or advised to do all of these. Choose a selection that best suits the ability of your class.

Main event

D Digital activity: Collector Cards *MAM* Routines: Notice & Wonder; Reason & Respond, with Think-Pair-Share

Display the poster, in which the characters are organising their collector cards into albums. Using Think-Pair-Share, click to play or ask/say:

- How many cards does each page hold?
- Each album has 10 pages. How many cards does each album hold?
- Mia has 72 cards. How many full pages of 10 is that?
- How many ones is that?
- Jay has 54 cards. How many full pages of 10 is that?
- How many ones is that?
- Dara has 61 cards. How many full pages of 10 is that?
- How many ones is that?
- Lexi has 80 cards. How many full pages of 10 is that?
- How many ones is that?

D C Digital activity: Tens and Ones
***MAM* Routine: Would This Work?**

Ask the children to show the number 54 as tens and ones, in various ways (e.g. they can use concrete materials and/or write on their MWBs). Play the resource, in which the characters show a variety of ways to show the number. Do they work?

C Concrete activity: Representing Two-digit Numbers
***MAM* Routine: Build it; Sketch it; Write it**

Distribute any available concrete resources for representing numbers up to 100 (see suggestions in equipment section) and place value arrow cards to each pair/group (see Pupil Pack). Ask the children to represent various numbers (from 30 to 100, including numbers ending in zero), using at least one mathematical model in each of the following three categories:

Assessment Opportunity

- Build it! Can you use classroom resources to represent the number? Show us.
- Sketch it! Can you represent the number as a sketch? Show us.
- Write it! Can you use words, branching bonds or number sentences to represent the number? Show us.

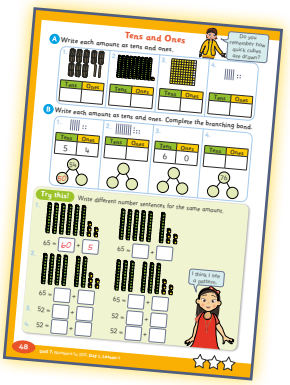
Teaching tip

In their Maths Journals, the children could use images/words to record what they built, sketched or wrote.

Let's strengthen

Children may not fully grasp the concept of tens and ones, i.e. that 10 ones = 1 ten.
For example, for 63, when using a place value grid, the child may write 60 tens and 3 ones; when using branching bonds, the child may write 6 + 3. Place value arrow cards (along with concrete materials) could be very useful in this case. For more practice activities, see the Unit 7 Let's Strengthen Suggestions for Teachers.

P Pupil's Book page 48: Tens and Ones



Optional consolidation and extension possibilities

Games Bank Play 'Throw and Keep', 'Throw and Place' and/or 'Dip, Dip!'

Story Read *All the Little Ones (and a Half)* by Mary Murphy.

Estimation Station Remind children to submit estimates, count the items and/or set up a new station.

Maths Eyes Can you think of examples of items that come in packages of ten? What about in the supermarket?

Review and Reflect Use the prompt questions in the Review and Reflect poster.

Home/School Links Book Page 19 can be completed at any stage after this lesson.

Days 6 and 7, Lesson 5

Comparing and Ordering Numbers

Focus of learning (with Elements)

- Compares two 2-digit numbers and represents the relationship between these numbers using <, > and = (U&C)
- Orders 2-digit numbers (For example: from least to most, most to least) (R)

Learning experiences

- (D) Digital activity: How Much Is Here? (2)
  ***MAM* Routines: Quick Images, with Write-Hide-Show**
- (D) Digital activity: Same But Different (1)
  ***MAM* Routines: Reason & Respond, with Think-Pair-Share**
- (D) Image: The Toy Shop (2)
  ***MAM* Routines: Reason & Respond, with Write-Hide-Show**
- (D) Video: Greater Than or Less Than ***MAM* Routine: Reason & Respond**
- (D) (C) Digital activity: Comparing Numbers
  ***MAM* Routine: Would This Work?**
- (D) Digital activity: Comparing Whole Numbers
  ***MAM* Routines: Reason & Respond, with Write-Hide-Show**
- (P) Pupil's Book page 49: Comparing and Ordering Numbers

Equipment

- Countable resources
- Any available physical resources for representing numbers up to 100, including: ten frames and counters, lollipop/bundling sticks, interlocking cubes, links, number shapes, number rods, rekenreks, base ten blocks
- Counting aids, such as 100 square or number lines
- Dice

Maths language

- compare, order, less than (<), fewer, smaller, less, greater than (>), larger, bigger, more, is equal to/ equal(s) (=), least, fewest/er, smallest/er, greatest/er, most, largest/er

Warm-up

(D) **Digital activity: How Much Is Here? (2)** ***MAM* Routines: Quick Images, with Write-Hide-Show**

Briefly reveal and then hide the image(s). Ask the children to record the total on their MWBs. Next, ask them to show their answers, and record these on the board. Be careful not to confirm the correct answer. Ask/say:

- Are there any answers that are unreasonable/not likely because they do not make sense? Which ones? Why do you think this?
- Which answer do you agree with?
- Explain the strategy you used to get your answer.
- Did anybody use a different strategy?

When there are no new strategies to discuss, reveal the image again and confirm the answer, using a variety of possible strategies.

D Digital activity: Same But Different (1)
***MAM* Routines: Reason & Respond, with Think-Pair-Share**

Play the slideshow and, using Think-Pair-Share, ask the children to propose reasons for why the images are the same and why they are different.

Assessment Opportunity

Ask the children to suggest which symbol could be used to compare the relationship between the two representations.

Main event

D Image: The Toy Shop (2) *MAM* Routines: Reason & Respond, with Write-Hide-Show

Display the image of the Toy Shop scene.

Using questions similar to those below, ask the children to compare the numbers of countable toy types. Ask the children to give reasons for their responses.

- Are there more toy cars or colouring pencils?
- How do you know?
- How could you write this? (e.g. 50 cars < 100 pencils)
- Are there more trucks or batteries?
- How do you know?
- How could you write this?
- Put these four numbers in order, starting with the smallest.

Repeat as required with other collections visible in the image.

Let's strengthen

Before counting, encourage the children to estimate (using their ability to subitise) which set they think has more and to explain why they think so. (See the Unit 7 Let's Strengthen Suggestions for Teachers.)

D Video: Greater Than or Less Than
***MAM* Routine: Reason & Respond**

Depending on the needs of your class, you may wish to revise/reinforce the maths language and symbols for greater than or less than, using this video. Ask the children to consider and respond to any questions posed.

Let's strengthen

The children might benefit from further reinforcement using cubes and lollipop sticks as used in the video to compare amounts up to 10 and to create the appropriate symbol. (See the Unit 7 Let's Strengthen Suggestions for Teachers.)

D C Digital activity: Comparing Numbers
***MAM* Routine: Would This Work?**

Play the activity. Ask the children to consider the question first, before revealing how the characters show a variety of ways to compare the set of numbers. Do their strategies work?

Ask the children:

- Which is greater: 80 or 69? Would this work to find out which is bigger?

Choose other random two-digit numbers. Ask the children to use greater than/less than/equals to explain the relationship between them, and to use materials or sketches to justify their explanations.

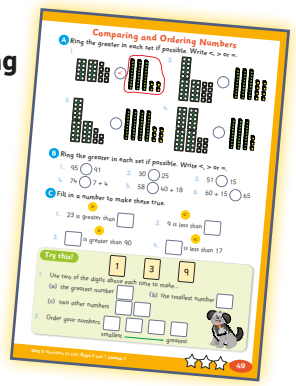
Teaching tip

To increase interest and engagement, add a competitive element! Organise the class into two groups: A and B. Use a random number generator (search online for 'random number generator') to select a number for the A players and another for the B players (suggested range of 40–100). Each child uses concrete materials or pictures to represent their allocated number. Encourage the children to use appropriate language and symbols (<, >, =) to explain the relationship between the numbers.

D Digital activity: Comparing Whole Numbers
***MAM* Routines: Reason & Respond, with Write-Hide-Show**

This is a multiple-choice activity, which can be done in groups or as a whole class. The children will see two sets of whole numbers (represented using ten frames and interlocking cubes) and they need to compare the amounts to decide which is greater. Display the slides, one at a time, and ask the children to decide which amount is greater. Ask the children to record their answers on their MWBs.

P Pupil's Book page 49: Comparing and Ordering Numbers



Optional consolidation and extension possibilities

Maths Eyes Use catalogues and flyers to find toys and games with up to 100 pieces/parts. Cut out the images and use them to compare and order the numbers.

Games Bank Play 'Win Big!' and/or 'Less is Best!'

Estimation Station Remind the children to submit estimates, count the items and/or set up a new station.

Story Read *More or Less* by Stuart J. Murphy, or listen to a reading at: edco.ie/f7t2
Afterwards, as a whole class or in groups, the children play a guessing game similar to the story, where mystery numbers are identified using questions.

Review and Reflect Use the prompt questions in the Review and Reflect poster.

Day 8, Lesson 6

Estimating Numbers

Focus of learning (with Elements)

- Investigates the efficiency of different estimation strategies, including rounding numbers to the nearest ten (R)

Learning experiences

- C Concrete activity: >, < or =?
  ***MAM* Routines: Reason & Respond, with Write-Hide-Show**
- D Digital activity: Estimating
  ***MAM* Routines: Concept Cartoon, with Think-Pair-Share**
- D Video: Rounding Numbers ***MAM* Routine: Write-Hide-Show**
- C Concrete activity: Rounding with Number Lines
  ***MAM* Routine: I Do, We Do, You Do**
- P Pupil's Book page 50: Estimating Numbers

Equipment

- Counting aids, such as 100 square or number lines
- Open number lines
- 0–9 spinners

Maths language

- nearly, roughly, close to, about the same as, just over, just under, exact, exactly, round to the nearest ten

Warm-up

C Concrete activity: >, < or =? *MAM* Routines: Reason & Respond, with Write-Hide-Show

Choose two random numbers up to 100 (search online for 'random number generator').

Write these numbers on the board, with a circle in between, e.g. 14 ◯ 91.

The children rewrite what you have written and also insert the correct symbol. Ask them to provide reasons/models to prove their answer.

Main event

D Digital activity: Estimating *MAM* Routines: Concept Cartoon, with Think-Pair-Share

Display the Concept Cartoon, which shows the characters estimating how many collector cards there are altogether. Using Think-Pair-Share, ask/say:

- What do you think? Explain why.
- Who do you not agree with? Why do you think they think that?
- How can we find out whose thinking is correct?

Allow time for the children to present their reasons. Prompt them to use physical resources and/or other visual supports as required to explain and justify their thinking, as appropriate.

D Video: Rounding Numbers
***MAM* Routine: Write-Hide-Show**

Play the video. The children use Write-Hide-Show on their MWBs to respond to the questions. Afterwards, say/ask:

Assessment Opportunity

- Explain how you could use this strategy to round 54 to the nearest ten. You can use your MWB to demonstrate.
- Explain how you could use this strategy to round 65 to the nearest ten. You can use your MWB to demonstrate.
- Can you think of another strategy to round numbers to the nearest ten?

Do the children recognise that 65 is an equal distance from both its neighbouring tens? Can they suggest a reason for rounding it to 70 rather than 60?

Teaching tip

If approximating 65, it is perfectly legitimate to round it to 60 or 70 as it is an equal distance from both. Traditionally, for any number equidistant from both rounding options, an arbitrary convention has developed to round the number to the greater of the two, even though in consistently doing so, this will introduce a greater margin of error between the approximation and the actual answer. Help the children to realise that, in real-life situations, either option can be chosen to suit the numbers involved.

C Concrete activity: Rounding with Number Lines
***MAM* Routine: I Do, We Do, You Do**

Spin the 0–9 spinner twice to create a two-digit number. Using I Do, We Do, You Do, demonstrate how to use the open number lines on the MWBs to round the number to the nearest ten. The children work in pairs and write in the multiple of ten before *and* after, and then identify the nearest ten. Repeat as required, gradually reducing support until the children can do it independently.

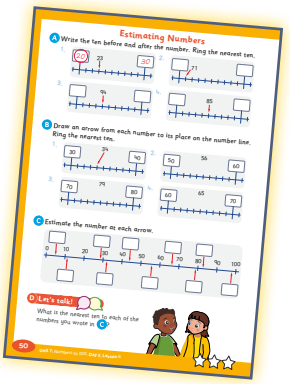
Let's strengthen

Children may benefit from the additional support of a more detailed 0–100 number line (e.g. a numeral roll, measuring tape or metre stick).

Let's deepen

Challenge the children to calculate the answer by mentally visualising the number line and not actually sketching it.

P Pupil's Book page 50: Estimating Numbers



Optional consolidation and extension possibilities

Strategy Wall Add the Calculation Strategy Wall Card for Rounding to the Nearest Ten to the class Strategy Wall. Refer to it throughout this and subsequent units. The children could also add their own sketches of this strategy, both to the Strategy Wall and in their Maths Journals.

Games Bank Choose one or more of the games listed so far in this unit. This could be a game that was not played previously or a game that the children would like to play again.

Story Read *The Long Wait* by Annie Cobb.

Estimation Station Remind the children to submit estimates, count the items and/or set up a new station.

Review and Reflect Use the prompt questions in the Review and Reflect poster.

Day 9, Lesson 7

Number Hunts

Focus of learning (with Elements)

- Identifies and recognises 2-digit numbers in the environment (U&C)
- Explores a range of tasks including games, puzzles and real-life contexts involving 2-digit numbers (A&PS)

Learning experiences

- D Digital activity: Same But Different (2)
  MAM Routines: Reason & Respond, with Think-Pair-Share
- C Concrete activity: Number Hunt in the Classroom
  MAM Routine: Write-Hide-Show
- C Concrete activity: Number Hunt in a Toy Catalogue
- C P Pupil's Book page 51: Number Hunts

Equipment

- Selection of toy catalogues, brochures and flyers
- Children's own books
- Various other print materials, such as newspapers, magazines and brochures

Maths language

- There is no new maths language for this lesson.

Warm-up

D Digital activity: Same But Different (2)
MAM Routines: Reason & Respond, with Think-Pair-Share

Play the slideshow and, using Think-Pair-Share, ask the children to propose reasons for why the images are the same and why they are different.

Assessment Opportunity

Main event

C Concrete activity: Number Hunt in the Classroom *MAM* Routine: Write-Hide-Show

In pairs, ask the children to find two-digit numbers in the classroom. For example, they may see numbers written on boxes in the classroom, sizes on their clothes/shoes, numbers in books, newspapers, magazines or brochures. (Remind the children that numbers on counting aids, such as 100 squares, are not included for this activity.) The children record the numbers on their MWBs. While they are hunting, draw a line the full length of the board, mark 0 at the start, 50 in the middle and 100 at the end. After sufficient time, ask/say:

- What number(s) did you find?
- Where did you find it/them?
- What was the meaning or purpose of the number(s)?
- Show me on the number line where the number(s) would be located.

After all the numbers have been collected, ask:

- Was it easier to find numbers less than or greater than 50? Why do you think this is so?
- To what multiple of ten would most of these numbers round?

C Concrete activity: Number Hunt in a Toy Catalogue

Using multiple copies of the same toy catalogue, the children work in pairs or small groups and race to be first to open the catalogue on the page number you call out. Ask:

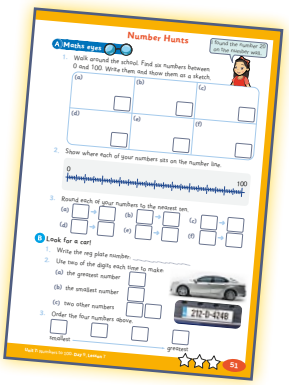
- What is the first word/sentence/picture on the page?

Teaching tip

If there are not enough toy catalogues, do this activity using any other book of which every child has a copy (e.g. a reader, textbook or dictionary).

Follow-up: Using the toy catalogues, the children find numbers up to 100, in standard or in word form (e.g. the number of pieces in a jigsaw puzzle, numbers on a set of blocks). The children cut out the numbers, order them from smallest to greatest, and create a display.

C P **Pupil's Book page 51: Number Hunts**



Teaching tip

The purpose of this page is to encourage the children to 'switch on their Maths Eyes' and become more aware of the numbers in their environment. In advance, check out the environment to ensure there are indeed numbers to be seen (on doors, car parks, signposts, etc.). If there are not many, it may be useful to add some! You could also enlist the help of other teachers and/or older pupils when working outdoors with the children. If it is not suitable to find a car registration plate, alternatively display a registration plate on the IWB (perhaps your own car) and/or ask the children to find out the registration number of a family member.

If working in a multi-class situation, all the children could participate if they are organised into mixed class groupings, where the 2nd Class children, using their Pupil's Books, are the scribes for their group. Depending on the ability of the group as a whole, it may be necessary to differentiate the task (by outcome, by range of numbers available, etc.).

Optional consolidation and extension possibilities

Story Read *One Hundred Hungry Ants* by Elinor J. Pinczes, or listen to a reading at: edco.ie/xkv6

Review and Reflect Use the prompt questions in the Review and Reflect poster.

Games Bank Choose a game to play.

Estimation Station Remind the children to submit estimates, count the items and/or set up a new station.

Day 10, Lesson 8

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

Use this menu of activity ideas to choose how best to structure this last lesson of the unit to suit your needs and the needs of your class.

Let's talk!	Let's create!
Review and Reflect Poster: Use Think-Pair-Share alongside the prompt questions to review the unit.	Create a 2-D and/or 3-D display illustrating all the different ways that numbers can be represented. Include examples of numbers (up to 100) found in print or online media. Estimation Stations: Each group of children creates their own Estimation Station for the other groups. When complete, each group rotates to the other stations to leave their estimate. Afterwards, count to reveal the totals.
Let's play!	**Maths strategies and models**
Choose a game from the Games Bank.	Using various numbers up to 100 (of teacher's or children's choosing), ask the children to show how they can model/represent numbers. This could include: concrete materials, place value grids, place value arrow cards, number lines, base ten blocks, branching bonds. Ask the children to explain how they estimated and/or rounded numbers. Which strategies and models did they prefer and why?
Progress Assessment Booklet	**Maths Eyes**
Complete Questions 27–32 on pages 15–16. Alternatively, these can be left to do as part of a bigger review during the next review week.	Go for a walk around the school. Ask: • Where can you see examples of numbers up to 100? Take photos for a classroom display/slideshow. Create a number trail specific to your school. You could use the images collected previously. Enlist children from the older classes to create a trail for the younger classes.
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 7 Let's Strengthen PCM. Consult the Unit 7 Let's Strengthen Suggestions for Teachers.	Use the Unit 7 Let's Deepen PCM.

Notes