

Maths and Me: Senior Infants – Short-Term Plan, Unit 3: Operations within 10 (October: Weeks 1&2)

Strand(s) > Strand unit(s)

Number > Sets and Operations; Place Value and Base Ten; Numeration and Counting; Uses of Number: Algebra > Pattern, Rules and Relationships.




Learning Outcome(s)

Through appropriately playful and engaging learning experiences children should be able to recognise and understand what happens when quantities (sets) are partitioned and combined; develop an awareness that the purpose of counting is to quantify; use a range of counting strategies for a range of purposes; develop an awareness that numbers have a variety of uses; explore, extend and create patterns and sequences

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	Bonds of 10: Investigates various arrangements of manipulatives to prompt different mental images of numbers up to 10, while developing a sense of each number (R); Orders and compares numbers 1–10 with each other (R); Establishes the number immediately before or after another number without having to start at one (R)		(D) Think-Pair-Share L1–6 (C) Notice & Wonder L1, 3 (P) Reason & Respond L1–6 (C) Comparing the Harvest L1 (D) Choral Counting L1, 6 (D) Quick Images L2, 5, 6	Intuitive Assessment: responding to emerging misconceptions
2	Number Bonds: Demonstrates understanding of all possible partitions of number bonds up to at least 10 (R); Explores how the appearance of a set has no effect on the overall total (U&C)		(D) Write-Hide-Show L2, 4–6 (C) Beanbag Throw L2 (D) 10 Green Bottles L3, 4 (C) Paper Plate Sets L5 (D) Three-Act Task L5 (C) Combining Sets with Zero L6	Planned Interactions: responding to insights gleaned from children's responses to learning experiences
3	More Bonds of 10: Uses comparative language (more, less, same/equal) to compare sets to at least 10 (C); Orders sets of objects up to at least 10 (A&PS); Uses manipulatives to demonstrate equivalence between the numeral and quantity of 10 (U&C)			
4	Partitioning Sets: Partitions sets of objects into two or more subsets (U&C); Partitions sets 2–10 into two or more subsets and recognises that this does not affect the total (R)			
5	Adding: Explores patterns in number sequences (U&C); Begins to explore the zero property (U&C); Describes similarities and differences between sets in terms of quantity (C); Jumps forwards on a number path to begin to express addition (C)		Print resources Pupil's Book pages 16–21 Home/School Links Book pages 10–11 PCM 10	Assessment Events: information gathered from completion of the unit assessment in the Progress Assessment Booklet pages 9–10
6	Zero: Begins to explore the zero property (adding zero to or subtracting zero from a number does not change the number) (U&C); Describes simple growing and shrinking patterns (C); Explains and argues the zero property of addition facts (C); Combines sets of objects up to at least 10, including the empty set/zero (U&C); Recognises the zero property of an empty set (U&C)			
7	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 'Senior Infants <i>Maths and Me</i> Progression Continua Overview' for a detailed breakdown of how all progression continua are covered.
 Maths Language	See 'Senior Infants <i>Maths and Me</i> Maths Language Overview', individual lesson plans and the Unit 3 Maths Language Cards.
 Equipment	See 'Senior Infants <i>Maths and Me</i> Maths Equipment Overview' and individual lesson plans.
Inclusive Practices	<ul style="list-style-type: none"> ● See Let's Strengthen and Let's Deepen suggestions throughout lesson plans. ● See Unit 3 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed below.) ● See Unit 3 Let's Strengthen PCM. ● See Unit 3 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- The overarching theme of Autumn is particularly appropriate at this time of the year, and this theme can be integrated with language and science for infants, via discussion about the seasons.
- The unit has been designed to help the children make rich and meaningful connections between learning experiences in different learning outcome labels. While this unit is concerned largely with the learning outcome label of Sets and Operations, it also includes learning experiences from Numeration and Counting, Patterns, Rules and Relationships and, to a lesser extent, Uses of Number.
- Throughout the unit, the children identify more or less than a number up to 10, introducing the concept of addition by combining two groups of objects.
- They continue to explore addition, now looking specifically at the number bonds to 10. These are shown using a variety of representations, including ten frames, the part–whole model, rekenreks and fingers. The children begin to explore the bonds in a more systematic way, and recognise the commutative law of addition.
- The = symbol is also introduced in this unit and features in the Pupil's Book pages. This may be the first time that the children have formally encountered the = symbol to mean 'equals' or 'is the same as'. This should be explicitly highlighted and explained to the children. Ask them if they have seen this symbol anywhere else before this and what do they think it means.
- The children are introduced to missing parts as a precursor to subtraction by counting on.

The theme of this unit is **Autumn**.

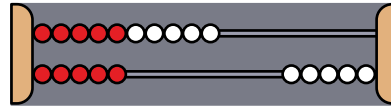
Common misconceptions and difficulties

- The children may include the whole in their count, when counting the parts in a part–whole model to find the whole.
- They may not see that the whole is the sum of the parts in a part–whole model.
- They may use a random approach to finding number bonds to 10, missing some of them.
- They may not be aware of the commutative law of addition, e.g. seeing 8 and 2 as a separate number bond from 2 and 8.

The Unit 3 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

- Assorted countable resources in the classroom, e.g. bears, links, lollipop sticks and counters
- Groupable cubes and interlocking cubes
- Ten frames
- Rekenreks
- Bead strings
- Fingers
- Number paths
- Branching bonds (an example of part–whole models)



A rekenrek



A bead string

Teaching tip

Ten Frames and Branching Bond manipulative printables are available to support this unit. Click on the resources icon on the *Maths and Me* book cover on edcolearning.ie

Day 1, Lesson 1

Bonds of 10

Focus of learning (with Elements)

- Investigates various arrangements of manipulatives to prompt different mental images of numbers up to 10, while developing a sense of each number (R)
- Orders and compares numbers 1–10 with each other (R)
- Establishes the number immediately before or after another number without having to start at one (R)

Learning experiences

- D** Digital activity: Harvest Time **MAM Routines: Notice & Wonder; Reason & Respond, with Think-Pair-Share**
- C** Concrete activity: Comparing the Harvest
- C** Concrete activity: Show Me!
MAM Routine: Reason & Respond
- D** Digital activity: Counting **MAM Routine: Choral Counting**
- P** Pupil's Book page 16: Bonds of 10

Equipment

- Ten empty drinks bottles
- Giant toppling tower blocks or similar
- Manipulatives for counting, such as bears, links, cubes, counters and lollipop sticks
- Counting aids, such as number paths, ten frames, counting beads and rekenreks

Maths language

- compare, match, missing number, equals, is the same as

Teaching tip

This lesson may be the first time that the children have formally encountered the = symbol to mean 'equals' or 'is the same as' (see Pupil's Book, page 16). This should be explicitly highlighted and explained to the children. Ask them if they have seen this symbol anywhere else before this and what they think it means.

Warm-up

- D** Digital activity: Harvest Time
MAM Routine: Notice & Wonder

Display the interactive poster and click to play or ask:

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

Main event

- D** Digital activity: Harvest Time **MAM Routines: Reason & Respond, with Think-Pair-Share**

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

- Do you know what time of year it is?
- Name some things you recognise.
- What is Jay doing?
- What is Lexi doing?
- How many pumpkins are there?
- How many apples can you see?

- How many beetroots might be in the wheelbarrow?
- How many potatoes are on the plant in Jay's hand?
- Which set contains the most vegetables?
- What strategy would you use to count the harvest?

- C** Concrete activity: Comparing the Harvest

With the poster still on display, allow the children to choose whatever concrete manipulatives they would like to use for counting, e.g. bears. Ask the children to count out



the number of bears to correspond with each of the following (one item at a time):

- The amount of carrots
- The amount of tomato plants
- The amount of pumpkins
- The amount of apples.

Monty could ask:

- Which set contains the most?
- How can you prove it? (Line up the carrots beside the pumpkins.)
- Were you right?
- Which item was easiest to compare?
- Now we're going to count the harvest; which strategy will you use?
- Did anyone choose a different strategy?

C Concrete activity: Show Me!

MAM Routine: Reason & Respond

Tell the children to show you 3, using their fingers.

Ask/say:

- Did anyone do it differently?
- Did anyone use two hands?
- Show me 5/7/9 with your fingers.
- Did anyone do it differently?
- Did anyone use two hands? Did you have to? Why?



D Digital activity: Counting

MAM Routine: Choral Counting

Choose a random number between 1 and 20. Ask the children to say this number and the next number, and then count forwards from there with/without the audio.

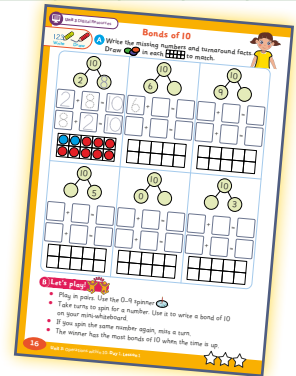
Let's strengthen

Some children may find it easier to have a number path in front of them initially so they can see the next number (and therefore will not automatically start at 1 again).

Let's deepen

Challenge some children to count backwards from a random number.

P Pupil's Book page 16: Bonds of 10



Teaching tip

Draw the children's attention to the + and = symbols on this page and ask them to explain what they think these mean.

Let's strengthen

For support, the children may use the Unit 3 Let's Strengthen PCM.

Optional consolidation and extension possibilities

Go Fish for Turnaround Facts Use the activity printable (it is recommended to print this on card for durability as it will be used in many of the future number units).

What Time Is It, Mr Wolf? As they play the game, tell the children to count their steps.

Hop and Count (Integration with PE). In the PE hall or yard, tell the children to hop/jump/touch the ground 0–10 times while counting.

Home/School Links Book Page 10 can be completed any time after this lesson.

Strategy Wall If you haven't already placed the 'Count All' calculation strategy wall card on the strategy wall, do so now.

Story Read *If You Were a Set* by Marcie Aboff, or listen to a reading at: edco.ie/ndu4



Days 2 and 3, Lesson 2

Number Bonds

Focus of learning (with Elements)

- Demonstrates understanding of all possible partitions of number bonds up to at least 10 (R)
- Explores how the appearance of a set has no effect on the overall total (U&C)

Learning experiences

- D** Digital activity: Dot Patterns (3) **MAM Routines: Quick Images, with Write-Hide-Show and Think-Pair-Share**
- D** **P** Toolkit: Dice
MAM Routines: Reason & Respond, with Think-Pair-Share
- D** Digital activity: Branching Bond Plates
MAM Routines: Reason & Respond, with Write-Hide-Show
- C** Concrete activity: Branching Bond Plates
MAM Routines: Reason & Respond, with Think-Pair-Share
- D** **C** Digital activity: Harvest Time – Apple Tree
MAM Routine: Reason & Respond
- C** Concrete activity: Beanbag Throw
- P** Pupil's Book page 17: Number Bonds

Equipment

- Manipulatives for counting, such as bears, links, cubes, counters and lollipop sticks
- Reusable dry erase pockets
- Markers
- Counting aids, such as number paths, ten frames, counting beads and rekenreks
- Three paper plates per pair for branching bond templates
- Ten beanbags
- Hula hoop
- PCM 10
- Monty the puppet

Maths language

- number bond, part-whole model, whole, part, plus, equals, is equal to, is the same as, turnaround fact, branching bond

Warm-up

Do one of these warm-up activities each day.

- D** **Digital activity: Dot Patterns (3)**
MAM Routines: Quick Images, with Write-Hide-Show and Think-Pair-Share

Play the Quick Images activity. Click to briefly reveal and then hides an image. Each image contains a set of dot patterns from 1 to 10. Using Write-Hide-Show, the children record their responses on their MWBs. Then, using Think-Pair-Share, ask:

- What did you see?
- How did you come up with your answer?
- Did anyone see the number a different way?

- D** **P** **Toolkit: Dice** **MAM Routines: Reason & Respond, with Think-Pair-Share**

Throw the digital dice to find a number between 1 and 5. Tell the children to write as many bonds of that number as they can remember, using either branching bonds or number sentences. Use Think-Pair-Share for feedback.

Teaching tip

Give each child a marker and a copy of PCM 9 Number Sentence Template placed in a reusable dry-erase pocket. (Or, the children could use the branching bond on the back of their MWBs.) The children choose which way to record number bonds.



Main event

Choose to do some or all of these activities over the two days.



D Digital activity: Branching Bond Plates
MAM Routines: Reason & Respond, with Write-Hide-Show

Display the interactive branching bond plates. Invite the children to drag and drop items from the top plate to the two bottom plates to create a number bond. Can they find all of the bonds?

Teaching tip

As the children suggest a bond, record it, using a number sentence and a branching bond on the board.

C Concrete activity: Branching Bond Plates
MAM Routines: Reason & Respond, with Think-Pair-Share

Ask the children to work in pairs. Give each pair three paper plates and ten cubes (or bears). Tell the children to place the ten cubes on the top plate. Next, ask them to move seven of the cubes to one of the bottom plates. Use Think-Pair-Share for feedback. Ask:



- How many cubes are left for the other plate?

The children combine the cubes together again on the top plate and check that the number equals 10. Repeat this activity for all of the bonds of 10.



D C Digital activity: Harvest Time – Apple Tree
MAM Routine: Reason & Respond

Give each child ten cubes, a marker and a copy of PCM 10: Apple Tree placed in a reusable dry-erase pocket. Display the interactive poster, which focuses on one apple tree. Click to play or ask:

- How many red apples can you see on the tree?
- How many green apples can you see on the tree?
- What number bond does that remind you of? (3 and 4 makes 7.)

- Is there another way of saying this number bond? (Yes, its turnaround fact is 4 and 3 makes 7. Is this a new number bond?)
- How many apples are on the ground?
- Are there more apples on the tree or on the ground?
- How many apples in total?
- What strategy did you use to find your answer?
- Can you give a number sentence for this picture?
- If 3 apples fell off the tree, how many apples are now on the ground?

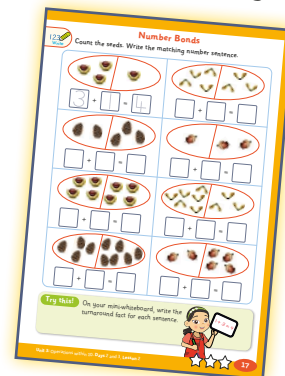
C Concrete activity: Beanbag Throw

Lay a hula hoop on the floor. Monty the puppet could try throwing the first set of beanbags into the hula hoop. The children take turns throwing eight, nine or ten beanbags, aiming them for inside the hula hoop. After each child has taken their ten throws, ask:

- How many beanbags landed inside and how many landed outside the hula hoop?

The children write the numbers on their branching bonds.

P Pupil's Book page 17: Number Bonds



Let's strengthen

Some children may need blocks/bears to help them count.

Let's deepen

Some children could be challenged to work out the other number bonds of the totals on Pupil's Book page 17, using the Unit 3 Let's Deepen PCM.

Optional consolidation and extension possibilities

Go Fish for Turnaround Facts Use the activity printable.

Sensory ('Feely') Bag Use a sensory ('feely') bag to allow the children to count a variety of items by feeling.

Games Bank Play 'Roll and Add'.

Listen and Count Tell the children to close their eyes and listen as you drop marbles or buttons into a tin, one by one. Ask them how many you dropped. Using Write-Hide-Show, the children should use numbers, tallies or other marks to record their responses.

Days 4 and 5, Lesson 3

More Bonds of 10

Focus of learning (with Elements)

- Uses comparative language (more, less, same/equal) to compare sets to at least 10 (C)
- Orders sets of objects up to at least 10 (A&PS)
- Uses manipulatives to demonstrate equivalence between the numeral and quantity of 10 (U&C)

Learning experiences

- D C** Animation: 10 Green Bottles
- D** Digital activity: Which One Doesn't Belong? (1) **MAM Routines: Reason & Respond, with Think-Pair-Share**
- D** Digital activity: Harvest Time: Sets **MAM Routines: Notice & Wonder, with Reason & Respond and Think-Pair-Share**
- C** Concrete activity: Paper Plate Bonds **MAM Routine: Think-Pair-Share**
- P** Pupil's Book page 18: More Bonds of 10

Equipment

- Ten empty drinks bottles
- Giant toppling tower blocks or similar
- Ten skittles
- Ball for bowling
- Manipulatives for counting, such as bears, links, cubes, counters and lollipop sticks
- Counting aids, such as number paths, ten frames, counting beads and rekenreks
- Three paper plates (one large; two smaller that are the same size) per pair for branching bond templates
- Ten beanbags
- Hula hoop
- Monty the puppet

Maths language

- more, less, how many altogether?, one more, one less

Warm-up

Do one of these warm-up activities each day.

D C Animation: 10 Green Bottles

Use giant toppling tower blocks to build a 'wall'. Ask the children to line up ten empty drinks bottles on the wall. Play the animation and ask a child to lay one bottle down after each verse of the song. Sing the song together, asking the children to represent the bottles with their fingers, folding down one finger each time a bottle falls.

D Digital activity: Which One Doesn't Belong? (1)
MAM Routines: Reason & Respond, with Think-Pair-Share

Select one or two of these slides to do as a warm-up.

Display a slide and ask:

- Which one doesn't belong?

Tell the children to record the number on their MWBs. Use Think-Pair-Share for feedback. Monty could ask for the feedback:

- Why doesn't it belong?

Teaching tip

In all cases, there will be multiple possible answers, and it is likely that there will be multiple reasons that can be given for each answer.

Main event

Choose to do some or all of these activities over the two days.



D C Digital activity: Harvest Time: Sets
MAM Routines: Notice & Wonder, with Reason & Respond and Think-Pair-Share

Display the interactive poster and click to play or ask the following questions:

- Which apple tree has more apples?
- What colour apples are there more of on the tree?
- How many more would you need to have equal sets on the tree?
- How many tomatoes are there?
- Are there more turnips than potatoes?
- Are there more tomatoes than apples?
- How many red apples in the basket?
- How many red apples altogether?
- How many tomatoes are there altogether?
- If Lexi eats one apple from the basket, how many red apples are there still in the basket?

Ask the children to work in pairs and to use their double ten frames. Give each pair three plates and a sufficient number of double-sized or different-coloured counters. Look at the poster, focusing on the red apples and green apples on the large tree. Tell the children to compare the amount of red apples (3) to the amount of green apples (4). The children place red counters on one plate and green counters on the other plate. Using Think-Pair-Share for feedback, ask:

- Which plate has more?
- How can you prove it?

The children use the ten frames and counters to help

with the comparison. Ask:

- Which colour are there more of?
- Which colour are there less of?
- How many more would you need to have equal groups?

If time allows, focus next on the tomatoes (8), the potatoes (9), the wheelbarrow of turnips (6) and the basket of apples (5).

C Concrete activity: Paper Plate Bonds
MAM Routine: Think-Pair-Share

Ask the children to work in pairs. Give each pair three paper plates and ten cubes (or bears). Tell the children to place the ten cubes on the top plate. Next, ask them to move seven of the cubes to one of the bottom plates. Use Think-Pair-Share for feedback. Ask:

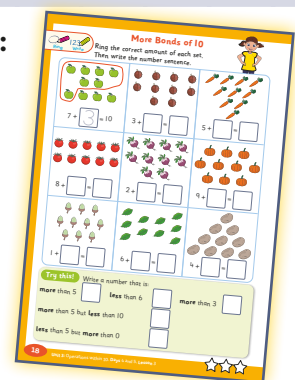
- How many cubes are left for the other plate?
- The children combine the cubes together again on the top plate and check that the number equals 10. Repeat this activity for all of the bonds of 10.



Teaching tip

The children could use markers and the branching bond on the back of their MWBs.

P Pupil's Book page 18:
More Bonds of 10



Optional consolidation and extension possibilities

What Time Is It, Mr Wolf? As they play the game, tell the children to count their steps.

Hop and Count (Integration with PE). In the PE hall or yard, tell the children to hop/jump/touch the ground 0–10 times while counting.

Sorting Activity Sort sets of items by size from biggest to smallest.

Home/School Links Book Page 11 can be completed any time after this lesson.

Story Read *Scaredy Cats: A Book about Combinations of Ten* by James Burnet, or listen to a reading at: edco.ie/76uf

Games Bank Play 'Roll and Add'.



Day 6, Lesson 4

Partitioning Sets

Focus of learning (with Elements)

- Partitions sets of objects into two or more subsets (U&C)
- Partitions sets 2–10 into two or more subsets and recognises that this does not affect the total (R)

Learning experiences

- D** Digital activity: Which One Doesn't Belong? (2)
MAM Routine: Reason & Respond
- D** Toolkit: Branching Bonds **MAM Routines: Reason & Respond, with Write-Hide-Show**
- C** Concrete activity: Paper Plate Bonds
MAM Routine: Think-Pair-Share
- P** Pupil's Book page 19: Partitioning Sets

Equipment

- Manipulatives for counting, such as bears, links, cubes, counters and lollipop sticks
- Counting aids, such as number paths, ten frames, counting beads and rekenreks
- Three paper plates (one large; two smaller that are the same size) per pair for branching bond templates

Maths language

- number sentence, add, total

Warm-up

- D** Digital activity: Which One Doesn't Belong? (2)
MAM Routine: Reason & Respond

Choose one or two of these slides to do as a warm-up. Display a slide and ask:

- Which one doesn't belong?

Tell the children to record the number on their MWBs.

Teaching tip

In all cases, there will be multiple possible answers, and it is likely that there will be multiple reasons that can be given for each answer.

Main event

- D** Toolkit: Branching Bonds **MAM Routines: Reason & Respond, with Write-Hide-Show**

Display the branching bond e-manipulative. Invite the children to drag and drop items from the top plate to the bottom plates and create a number bond. Can they find all of the number bonds?

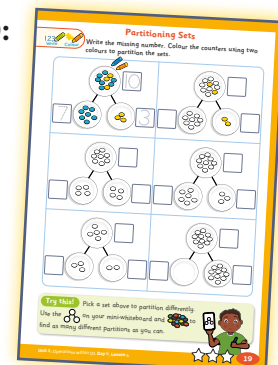
- C** Concrete activity: Paper Plate Bonds
MAM Routine: Think-Pair-Share

Ask the children to work in pairs. Give each pair three paper plates and ten cubes (or bears). Tell the children to place the ten cubes on the top plate. Next, ask them to move seven of the cubes to one of the bottom plates. Use Think-Pair-Share for feedback. Ask:

- How many cubes are left for the other plate?

The children combine the cubes together again on the top plate and check that the number equals 10. Repeat this activity for all of the bonds of 10.

- P** Pupil's Book page 19:
Partitioning Sets



Optional consolidation and extension possibilities

Go Fish for Turnaround Facts Use the activity printable.

Hop and Count (Integration with PE) In the PE hall or yard, tell the children to hop/jump/touch the ground 0–10 times while counting.

Games Bank Play ‘Cross Out Totals’.

Listen and Count Tell the children to close their eyes and listen as you drop marbles or buttons into a tin, one by one. Ask them how many you dropped. Using Write-Hide-Show, the children should use numbers, tallies or other marks to record their responses.

Days 7 and 8, Lesson 5

Adding

Focus of learning (with Elements)

- Explores patterns in number sequences (U&C)
- Begins to explore the zero property (U&C)
- Describes similarities and differences between sets in terms of quantity (C)
- Jumps forwards on a number path to begin to express addition (C)

Learning experiences

- D** Digital activity: Dot Patterns (4)
MAM Routines: Quick Images, with Write-Hide-Show
- D** Digital activity: Same But Different – Sets
MAM Routines: Reason & Respond, with Think-Pair-Share
- C** Concrete activity: Paper Plate Sets
- D** Video: Number Path (1)
MAM Routines: Reason & Respond, with Write-Hide-Show
- C** Concrete activity: Combining Sets of Two Items
MAM Routine: Reason & Respond
- D** Digital activity: Birthday Party **MAM Routine: Three-Act Task**
- P** Pupil’s Book page 20: Adding

Equipment

- Manipulatives for counting, such as bears, links, cubes, counters and lollipop sticks
- Counting aids, such as number paths, ten frames, counting beads and rekenreks
- Paper plates (one large; two smaller that are the same size) per pair for branching bond templates
- One dice per pair

Maths language

- altogether, addition, adding together, one more, reasonable estimate, not reasonable estimate

Warm-up

Do one of these warm-up activities each day.

- D** **Digital activity: Dot Patterns (4)** **MAM Routines: Quick Images, with Write-Hide-Show**

Using Write-Hide-Show, the children record their responses on their MWBs. Ask:

- What did you see?
- How did you come up with your answer?
- Did anyone see the number a different way?

Teaching tip

Discuss the patterns the children see. Do they notice the doubles? In some slides, the children might notice that they are nearly doubles (without naming the strategy). However, if this response is given by a pupil, accept the strategy name and allow the children to create a strategy poster for the wall.



- D Digital activity: Same But Different – Sets**
MAM Routines: Reason & Respond, with Think-Pair-Share

Play the slideshow. Ask:

- What is the same?
- What is different?

Use Think-Pair-Share for feedback.

Main event

Choose to do some or all of these activities over the two days.

C Concrete activity: Paper Plate Sets

Ask the children to work in pairs. Give each pair three paper plates and ten cubes (or bears). Tell the children to place a set of cubes on one lower plate, and another set on the other lower plate. Then ask them to combine the two sets on the top plate.



D Video: Number Path (1) **MAM Routines: Reason & Respond, with Write-Hide-Show**

Play the video, which shows a number path of 1–10, followed by the number sentence $2 + 8$. **Pause** to question the children and allow them to record their responses on their MWBs. Ask:

- Can anyone tell me where the counter will start?
- Why is it easier to start at the bigger number?
- Do you get a different answer if you start at the smaller number?
- How can we prove that?

Play the rest of the video, to show that it is easier to count on from 8 than 2, but that you reach the same answer either way.

C Concrete activity: Combining Sets of Two Items
MAM Routine: Reason & Respond

Ask the children to use their number paths. Distribute counters to each child/pair. Tell the children to choose the bigger number to start with. For example, for 3 and 7, they should place a counter on 7 on the number path and then add 3 more counters. Ask them to try starting at 3 and adding 7, so that they come to the realisation that the order of addition does not affect the result.

Let's strengthen

Some children may need to use a number path with counters on each square to represent the number.

Let's deepen

Challenge some children to add three numbers, choosing the biggest to start with. For example: for $2 + 1 + 5$, start with 5, then add 2, then add 1. (Prove it!)

D Digital activity: Birthday Party
MAM Routine: Three-Act Task

This Three-Act Task will encourage children to use a variety of strategies for addition.



Act 1: Notice & Wonder

Play the video of the birthday party. Click to play or ask the following questions:

- What do you notice?
- What do you wonder? (e.g. I wonder how many presents there are. I wonder how many cups/guests there are.) Does the amount of cups equal the amount of guests? Record the children's responses on the board.
- (Reveal the focus question.) How many candles on the cake?

Act 2: Productive Struggle

Look at the image and click to play or ask:

- Make an estimate that is too high.
- Make an estimate that is too low.
- Make a reasonable estimate.

Teaching tip

Record their estimates on the board, under the headings *Too high*, *Too low* and *Reasonable*, without giving weight to a correct answer. The children might try to count, and you can write down their guesses before the extra information is given.

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

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

Once the children explain that they need to see the candles more clearly, click to reveal the second image, which shows a blue candle with the number 6 and a yellow candle with the number 3. Pause to allow the children to work towards an answer. Click to play or ask:

- What information do you have now?
- What counting strategy could you use to work out how many blue candles?



- What counting strategy could you use to work out how many yellow candles?
- What strategies could you use to find out how many candles in total?

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

Act 3: The Big Reveal

The children share and discuss their strategies, solutions and models. Ask:

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

Then, flip the image to show a second image which reveals the number of blue/yellow candles on the cake. Click to play or ask:

- How many blue candles?
- How many yellow candles?
- How many candles altogether?

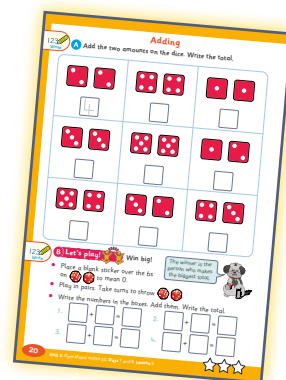
Let's strengthen

Some children may need a double ten frame and support with choosing concrete manipulatives.

Let's deepen

Some children could be asked to compare the blue and yellow candles.

P Pupil's Book page 20: Adding



Teacher note: Place a sticker over the six as the children will not have encountered double 6 this early in Senior Infants.

Optional consolidation and extension possibilities

What Time Is It, Mr Wolf? As they play the game, tell the children to count their steps.

Sensory ('Feely') Bag Use a sensory ('feely') bag to allow the children to count a variety of items by feeling.

Games Bank Play the 'Cross Out Totals'.

Sorting Activity Sort sets of items by size from biggest to smallest.

Day 9, Lesson 6

Zero

Focus of learning (with Elements)

- Begins to explore the zero property (adding zero to or subtracting zero from a number does not change the number) (U&C)
- Describes simple growing and shrinking patterns (C)
- Explains and argues the zero property of addition facts (C)
- Combines sets of objects up to at least 10, including the empty set/zero (U&C)
- Recognises the zero property of an empty set (U&C)

Learning experiences

- D** Digital activity: Counting **MAM Routine: Choral Counting**
- D** Digital activity: Which One Doesn't Belong? (3) **MAM Routines: Reason & Respond, with Think-Pair-Share**
- C** Concrete activity: Combining Sets with Zero
- D** Video: Number Path (2) **MAM Routines: Reason & Respond, with Write-Hide-Show**
- C** Concrete activity: Number Paths **MAM Routine: Reason & Respond**
- P** Pupil's Book page 21: Zero

Equipment

- Manipulatives for counting, such as bears, links, cubes, counters and lollipop sticks
- Counting aids, such as number paths, ten frames, counting beads and rekenreks
- Three paper plates per child for branching bond templates

Maths language

- There is no new maths language for this lesson.

Warm-up

D Digital activity: Counting**MAM Routine: Choral Counting**

Display the counting tool. Using the arrow buttons, choose a number between 1 and 20. Ask the children to say this number and count forwards from there without the audio.

D Digital activity: Which One Doesn't Belong? (3)**MAM Routines: Reason & Respond, with Think-Pair-Share**

Select one or two of these slides to do as a warm-up.

Display a slide and ask:

- Which one doesn't belong?

Tell the children to record the number on their MWBs. Use Think-Pair-Share for feedback.

Teaching tip

In all cases, there will be multiple possible answers, and it is likely that there will be multiple reasons that can be given for each answer.

Main event

C Concrete activity: Combining Sets with Zero

Ask the children to work in pairs. Give each pair three paper plates and ten counters. Tell the children to place 7 counters on one of the bottom plates, and 0 counters on the other bottom plate. Next, ask them to combine both sets on the top plate. They should notice that the number they are adding to 0 is also the answer and the order of addition does not affect the result.

**D Video: Number Path (2) MAM Routines: Reason & Respond, with Write-Hide-Show**

Play the video, which shows a number path of 1–10, followed by the number sentence $0 + 7$. **Pause** to question the children and allow them to record their responses on their MWBs. Ask:

- Can anyone tell me where the counter will start?
- Why is it easier to start at the bigger number?
- Do you get a different answer if you start at the smaller number?
- How can we prove it?

The number 7 is highlighted on the number path and a counter is placed on the number path. 0 is highlighted in the number sentence and the counter moves forward 0 spaces. A second number path appears: 0 is highlighted off the path, and 7 is added to it. Ask/say:

- What did you notice?
- Show your answers. Did anyone use a different strategy?

C Concrete activity: Number Paths**MAM Routine: Reason & Respond**

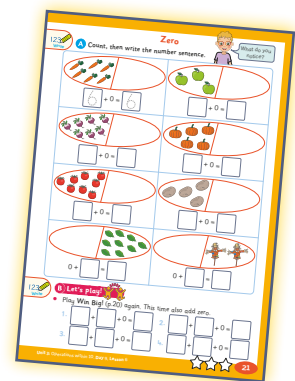
Ask the children to work in pairs to use a number path to solve some more questions that involve adding zero.

Let's strengthen

Some children may need the support of concrete materials.

Let's deepen

Ask some children to make up their own zero questions for their partner to answer.

P Pupil's Book page 21: Zero

Optional consolidation and extension possibilities

Go Fish for Turnaround Facts Use the activity printable.

What Time Is It, Mr Wolf? As they play the game, tell the children to count their steps.

Sorting Activity Sort sets of items by size from biggest to smallest.

Sensory ('Feely') Bag Use a sensory ('feely') bag to allow the children to count a variety of items by feeling.

Listen and Count Tell the children to close their eyes and listen as you drop marbles or buttons into a tin, one by one. Ask them how many you dropped. Using Write-Hide-Show, the children should use numbers, tallies or other marks to record their responses.

Hop and Count (Integration with PE) In the PE hall or yard, tell the children to hop/jump/touch the ground 0–10 times while counting.

Day 10, Lesson 7

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.

<p>Let's talk!</p> <p>Use Think-Pair-Share to review the unit. Individual children could present examples of their own drawings/work/constructions to the class, and talk about what they have learned.</p>	<p>Let's play!</p> <ul style="list-style-type: none"> Play 'Bowling' or 'Beanbag Throw' again. Play any of the games from the 'Go Fish' printable Play 'Roll and Add' or 'Cross Out Totals' from the Games Bank.
<p>Maths language</p> <p>Ask the children to explain some of the key language from the unit, perhaps using examples or drawings on their MWBs. 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?</p>	<p>Maths models</p> <p>Ask the children to give examples of the models they used in this unit, e.g. number bonds, part-whole models (plates) and branching bonds. Which models did they prefer and why?</p>
<p>Progress Assessment Booklet</p> <p>Complete Questions 9–13 on pages 9–10. Alternatively, these can be left to do as part of a bigger review during the next review week.</p>	<p>Let's build!</p> <p>Build branching bonds, part-whole models or towers/walls.</p>
<p>Let's strengthen</p> <p>Identify children who might benefit from extra practice with some of the key concepts or skills in this unit. Consult the Unit 3 Let's Strengthen Suggestions for Teachers.</p>	<p>Let's deepen</p> <p>If it hasn't been used already, use the Unit 3 Let's Deepen PCM to work out the other number bonds of the totals on Pupil's Book page 17.</p>

