Maths and Me: 1st Class – Short-Term Plan, Unit 2: Addition and Subtraction 1 (September: Weeks 3&4)

Strand(s) > Strand Unit(s)	Number > Sets and Operations; Numeration and Counting; Place Value and Base Ten. Algebra > Expressions and Equations; Patterns, Rules and Relationships.
Learning Outcome(s)	Through appropriately playful and engaging learning experiences children should be able to select, make use of and represent a range of addition and subtraction strategies.

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	**Bonds of 10:** Fluently recalls addition and subtraction facts [bonds] to at least 10 (C); Selects and shares mental strategies for addition and subtraction facts within 20 (A&PS)		D Give the Dog a Bone! L1, 5 C Build it; Sketch it; Write it L1, 5, 7, 8 D Reason & Respond L1, 3–6, 8 D C Think-Pair-Share L2–5 C The Sound of a Number: Bonds of 10 L2 D Would This Work? L2 D Turnaround! L2 D Notice & Wonder L3, 8 C Write-Hide-Show L3 D What Number Am I? L4, 7 C Game: Take Away L5 D Move with Monty L6 C Game: Towers Take Away L6 C Place Value Arrow Cards L7 C I Do, We Do, You Do L7 **Print resources** Pupil's Book pages 13–19 Home/School Links Book pages 8–9 PCMs 8, 9, 10, 11 Unit 2 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 pages 9–10
2	**Turnaround Facts:** Begins to explore the commutative property of addition (we can swap the order of the numbers being added and still get the same total) (U&C); Demonstrates, justifies, explains and argues the commutative property in relation to addition facts (R)			
3	**Doubles:** Explores doubles as an approach to support calculation strategies (U&C)			
4	**Near Doubles:** Explores near doubles as an approach to support calculation strategies (U&C); Uses knowledge of simple fact groups (doubles and 10) to develop more calculation strategies (near doubling) (R)			
5	**Subtraction as Take Away:** Uses a range of strategies to subtract mentally up to at least 10 (A&PS); Uses the minus symbol (–) to convey subtraction (C)			
6	**Adding and Subtracting 0, 1 and 2:** Explores and uses the zero property when performing calculations (U&C); Jumps forwards/backwards on a number line to begin to express addition and subtraction (C)			
7	**Adding and Subtracting 10:** Selects and shares mental strategies for addition and subtraction facts within 20 (A&PS)			
8	**Adding Using Friendly Facts:** Uses knowledge of simple fact groups [doubles, bonds of 10] to develop more calculation strategies (adding three numbers) (R)			
9	**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 2 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 2 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed below.) • See Unit 2 Let's Strengthen PCM. • See Unit 2 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- Familiar strategies, covered in Senior Infants, such as Number Bonds of 10, Turnaround Facts and Doubles (to 10) are consolidated in this unit. New strategies including Near Doubles and Adding and Subtracting 10 are introduced. There is a focus on strategies the children can use to increase mathematical fluency and accuracy.
- The unit follows on from Unit 1 Numbers to 30, but stays within the range of 20. The emphasis is very much on using strategies and encouraging a mindset which is not solely focused on the 'right answer'. Learning experiences from different strand units, such as Expressions and Equations, Patterns, Rules and Relationships are also integrated.
- 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 classroom 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 hall or yard, while children are tidying up after breaks, and/or when they are going home.

The theme of this unit is **The Woodlands in Autumn**. It is very suitable for this time of year, allowing for outdoor learning and enabling rich integration opportunities.

Common misconceptions and difficulties

Addition and Subtraction are concepts which children can appear to have grasped (e.g. demonstrating surface knowledge such as computing accurately when the required operation is given), but where true depth of knowledge can be lacking or missing entirely.

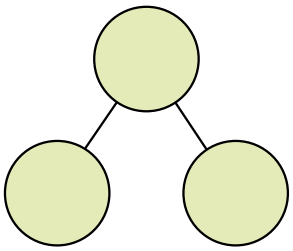
- The children may fall back on counting strategies they are comfortable with, including count all, instead of using known bonds.
- They may struggle to grasp the conceptual differences between addition and subtraction.
- They may incorrectly apply the commutative property to subtraction.
- They may read symbols incorrectly.
- They may struggle to identify which strategy to apply in a given context.

- They may struggle to recognise the parts and whole amount in operational relationships, and may confuse which is which.
- They may use random pairs of numbers (rather than using the correct bond to 10) when using the part–whole model.
- They may 'miss out' numbers, count numbers more than once, or may not employ one-to-one correspondence when counting
- They may think that the tens digit represents 1 rather than 1 ten.

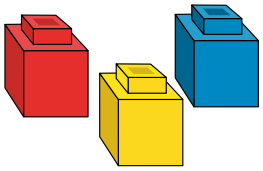
The Unit 2 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

- Assorted countable resources in classroom, e.g. counters, chestnuts, links
- Groupable cubes, e.g. interlocking cubes
- Ten frames
- Rekenreks
- Number paths
- Branching bonds
- Number lines
- Sorting circles



Branching bonds



Interlocking cubes

Teaching tip

The following manipulative printables are available to support the unit: Number Path, Number Line, Branching Bonds, Number Shapes, Base Ten Blocks, Ten Frames, and Sorting Circles. 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)

- Fluently recalls addition and subtraction facts [bonds] to at least 10 (C)
- Selects and shares mental strategies for addition and subtraction facts within 20 (A&PS)

Learning experiences

- (D) Digital activity: Give the Dog a Bone!
- (C) Concrete activity: All About 10
  ***MAM* Routine: Build it; Sketch it; Write it**
- (D) (C) Digital activity: The Wind Blew 10
  ***MAM* Routine: Reason & Respond**
- (P) Pupil's Book page 13: Bonds of 10

Equipment

- Interlocking cubes, ten frames, number shapes, base ten blocks, links, number rods
- Colouring pencils in two colours
- PCM 8

Maths language

- turnaround fact, bonds of 10, solve, addition, equals

Teaching tip

Throughout the unit, take photos of the children engaged in activities. Use these photos in the warm-up in the Review and Reflect lesson.

Warm-up

(D) Digital activity: Give the Dog a Bone!

Open the resource, in which Monty is waiting for his bone! Then explain the rules of the game to the children:

- Choose one child to close their eyes while you hide an object in the room.
- The child finds the hidden object, while the rest of the class counts to 20, forwards and/or backwards, and relatively slowly.
- The further away the child is from the hidden object, the softer the children count. The closer, the louder they count.
- The challenge is to find the object before 20 is reached.
- If the child finds the object, they can feed Monty a bone on the IWB and get a 'woof' in return.
- Another child can then have a turn: the starting point is where the last turn finished (counting on).

Let's strengthen

Some children will benefit from using a number path.

Main event

(C) Concrete activity: All About 10
***MAM* Routine: Build it; Sketch it; Write it**

Emphasise to the children that 10 is a very important number in maths and that you want them to explore all about 10. Provide each group with interlocking cubes (or building blocks) in two colours.

Assessment Opportunity

- Build it! How many different ways can you find to arrange 10 cubes using two colours?
- Sketch it! Can you sketch each arrangement you make using two colouring pencils (e.g. red and green)?
- Write it! Can you write numbers that would help explain what you have built?

Conference as the children work, checking for understanding of key vocabulary and concepts. Will the children include the additive property of 0? If not, draw their attention to it. Will some children recognise the commutative property (i.e. 4 + 6 and 6 + 4)? Refer to the Calculation Strategy Wall Card for Turnaround Facts.

At the end of the activity, and working as a whole class, ask the children to recall which two-colour combinations they made with 10 interlocking cubes. If a child used, for example, 3 green cubes and 7 yellow cubes, elicit this from them. Ask:

- Is that 10 altogether?

Record this on the IWB as a number sentence.

Continue until all the children's ideas are recorded. Stand back and ask:

- Do we have all the addition number facts for 10?

You may have to prompt the children towards any missing facts, particularly 0 + 10 = 10. Ask the children how the bonds might be ordered.

Let's strengthen

For some children, 'Build it' and 'Sketch it' will be sufficient, and 'Write it' will come later.

D **C** **Digital activity: The Wind Blew 10**
***MAM* Routine: Reason & Respond**

It's been a very windy autumn day and the children are gathering fallen chestnuts in the forest. Play the slideshow and ask:

- How could we use the branching bond to show our thinking about how many chestnuts Mia and Lexi have gathered altogether?
- Use other models to show how many chestnuts they have each and how many altogether.

As the children share their ideas, record a selection of answers on the IWB, whether correct or incorrect, and whether or not the addition, subtraction and/or equals symbols were used. The class reflect on the recorded answers, explaining and justifying their selection of the best representation of the slideshow. Use revoicing to consolidate key concepts such as the additive property of zero.

The Reason & Respond question that follows can be used to refine the children's thinking and to check for understanding of the key concept. Focus on one number bond at a time.

- If I know 9 + 1 = 10, could I use that fact to solve 9 + 2 = ? (Continue with further examples of near bonds of 10.)

Using the models, branching bonds and/or equations (e.g. showing 6 + 4 = 10), ask the children to think back. Ask/say:

- There were 10 chestnuts on the tree, then 6 fell to Mia. How many of the 10 were left on the tree? Model this using any resource you choose. (Replay the slideshow as an aid.)
- Can you say that as a number sentence?
- I know 10 take away the 6 that fell is 4, because 6 + 4 = 10.

Work through some further examples of subtraction as complementary addition. Ask:

- What other take away sentences can you say?

Draw the children's attention to the Calculation Strategy Wall Card for Number Bonds of 10, and the number bonds of 10 printed on the inside cover of *Maths and Me*.

Let's strengthen

The children will also benefit from having 10 counters (or chestnuts) and a branching bond template (see PCM 8) for Reason & Respond.

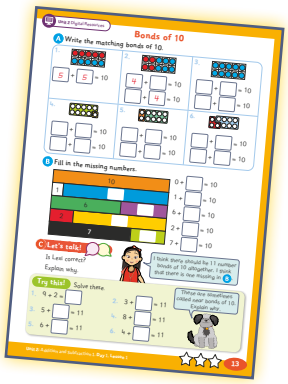
Let's deepen

Some children will be ready to use number bonds of 10 to solve equations with 3 addends (e.g. 2 + 6 + 8 =). Some children may be ready to use number bonds of 10 to find families of related facts (e.g. number bonds of 20).

Teaching tip

Take the children on a chestnut hunt or ask them to bring in chestnuts from home to use during this lesson.

P **Pupil's Book page 13: Bonds of 10**



Optional consolidation and extension possibilities

Games Bank Play 'Make 10' and/or 'Cover Up Totals'.

Integration PE: Play hopscotch to embed the concept of counting on.

Strategy Wall Add the Calculation Strategy Wall Cards for Counting, Turnaround Facts, and Number Bonds of 10 to the class Strategy Wall. Refer to the latter throughout this and subsequent units. The children could also add their own sketches of this strategy, both to the Strategy Wall and to their Maths Journals.

Review and Reflect Use the Prompt Questions Poster.

Day 2, Lesson 2

Turnaround Facts

Focus of learning (with Elements)

- Begins to explore the commutative property of addition (U&C)
- Demonstrates, justifies, explains and argues the commutative property in relation to addition facts (R)

Learning experiences

- (C) Concrete activity: The Sound of a Number: Bonds of 10
- (D) Digital activity: How Do You Do It? ***MAM* Routines: Would This Work?, with Think-Pair-Share**
- (D) (C) Digital activity: Turnaround!
- (P) Pupil's Book page 14: Turnaround Facts

Equipment

- Jar or can
- 1c coins
- Counters in two colours
- Counters, number shapes, ten frames, interlocking cubes
- Sorting circles

Maths language

- strategy, pattern, how many more?, plus

Warm-up

(C) Concrete activity: The Sound of a Number: Bonds of 10

The children close their eyes, listen, and count silently as you drop coins, one by one, into the jar. Ask/say:

- How many altogether?
- Write the number pattern. (For example, for 9 objects, it is 1, 2, 3, 4, 5, 6, 7, 8, 9.)
- Continue the pattern for 1/2/3 more object(s) in the jar.

Drop 9c into the jar. Ask:

- How many more do I need to make 10?
- Say/write the number bond of 10.

Repeat for other number bonds of 10.

Main event

(D) Digital activity: How Do You Do It? *MAM* Routines: Would This Work?, with Think-Pair-Share

Begin by asking the children to demonstrate how they would solve the equation 3 plus 8 = ?

Then display the digital resource, in which the *Maths and Me* characters show a variety of ways to solve the equation. Do they work? Many children will readily know the answer. Emphasise that *how* you do maths is very important. Supply the children with

resources (e.g. counters of two colours and double ten frames), where needed.

Using Think-Pair-Share, say/ask:

- Think about Jay's/Dara's/Lexi's/Mia's strategy to add the parts to get the whole. How would you do it?

Choose how to model adding the parts.

- Pair with a partner to model your choice of strategy: Tell them: 'I choose this strategy because ...'
- Share with the class: 'I think it will work because ...'

Use revoicing to amplify the children's thinking on the most efficient way of getting the answer.

If necessary, use guided questions:

- Did Jay need to count all the counters again?
- What could Dara have done instead?
- Lexi counted on from 3. Could Lexi have done it differently? How?
- Was Lexi correct when she said she just counted on from 3?
- Which strategy/way is the easiest/quickest? Why?
- Does it matter if we say 2 + 4 or if we turn it around to 4 + 2? Will the answer still be the same?
- How did Mia do it? What mistake did she make?

Draw the children's attention to the relevant Calculation Strategy Wall Cards: Turnaround Facts, Count On, Count On from a Larger Number and Count All.

Let's strengthen

Some children will need support to grasp the 'count on' concept.

Let's deepen

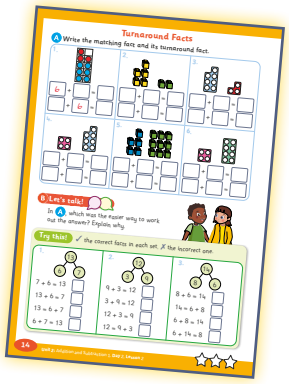
Some children will be ready to write the number sentence with the answer.

D C Digital activity: Turnaround!

Play the slideshow, which presents a series of equations. Show each equation to the class, then ask the children to explore and prove (using classroom resources such as counters) whether the better strategy is to 'turnaround' (i.e. put the bigger number first). The emphasis is on the 'proof' and justification. Use revoicing, with modeling if necessary, to support the children in verbalising their proofs and justifications.

Assessment Opportunity

P Pupil's Book page 14: Turnaround Facts



Optional consolidation and extension possibilities

Integration Language: English: The language of the natural world. STEM: Science: Variety and Characteristics of Living Things.

Strategy Wall Add the Calculation Strategy Wall Cards for Count On, Count On from a Larger Number, and Count All to the class Strategy Wall.

Review and Reflect Use the Prompt Questions Poster.

Day 3, Lesson 3

Doubles

Focus of learning (with Elements)

- Explores doubles as an approach to support calculation strategies (U&C)

Learning experiences

- C Bonds of 10 *MAM* Routines: Write-Hide-Show, with Reason & Respond
- D Animation: Double It (Part 1) *MAM* Routines: Notice & Wonder, with Think-Pair-Share; Reason & Respond
- P Pupil's Book page 15: Doubles

Equipment

- Coins
- Playing cards
- Classroom resources such as ten frames, counters, rekenreks, dominoes and dice

Maths language

- reasonable, double, symbols, even

Warm-up

C Bonds of 10 *MAM* Routines: Write-Hide-Show, with Reason & Respond

Ask the children to record one number bond of 10 on their MWBs. As the children show the facts, strategically record on the board correct and incorrect answers, duplicate answers and answers demonstrating the commutative and zero properties of addition. Reflecting the children's responses, this record can be in the form of a number sentence, branching bond or picture. Using Reason & Respond, ask:

- Do we have all the facts?
- Which facts are missing?
- Are all the answers reasonable? Do they make sense? Why? (Delete the incorrect answers.)
- Should we keep both 6 + 4 = 10 and 4 + 6 = 10? Why? What do they tell us about the order of numbers in an addition number sentence?
- What do you notice about the bond 5 + 5 = 10?
- Do you think 10 is an important number? Why?
- Where can you find the bonds of 10 in your Pupil's Book?
- Can you find them in our classroom?

Let's strengthen

Some children will benefit from using models such as ten frames in the warm-up.

Let's deepen

Challenge some children to use multiple models to show the number bonds.

Teaching tip

Use revoicing to check for understanding, further embed concepts and allow children to explain and justify their ideas.

Draw the children's attention to the Calculation Strategy Wall Card for Number Bonds of 10.

Main event

D Animation: Double It (Part 1)
***MAM* Routines: Notice & Wonder, with Think-Pair-Share; Reason & Respond**

Play the animation. Using Think-Pair-Share to collect feedback, ask:

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

Then, using Reason & Respond, refine the children's thinking and check for understanding of the key concept. Ask:

- What numbers did you see on the tiles the children were turning?
- How was it possible to win a chestnut?
- What did the tiles show each time a chestnut was won? Show me an example using classroom resources.
- When the two numbers are the same, what do we call that: the same, twins, doubles?
- What doubles did you see in the animation? Model them using classroom resources. Write them on your MWBs. (Record them on the board with or without answers and/or symbols as suggested by the children.)
- Some children used + and =. Why?
- How can we find the answers?
- How could we write each double as a number fact? What symbols would we use? (If not already suggested by the children.)
- Could we arrange the doubles in an order or pattern? Show me using classroom resources.
- Which double did you start with?
- Write them in order on your MWBs.
- When we arrange the doubles in that order, what do you notice about the answers?

One by one, write a series of calculations on the board, using doubles and number facts/bonds of 10. For each calculation, ask:

- Which strategy might we use to get the answer? Why? (If not suggested by the children, prompt them to think of number facts/bonds of 10, doubles and counting on the number path.)

Assessment Opportunity

- Use revoicing to allow the children to explain and justify their reasoning. Draw the children's attention to the Calculation Strategy Wall Card for Doubles. Reflect as a class on the strategies – is there a favourite?

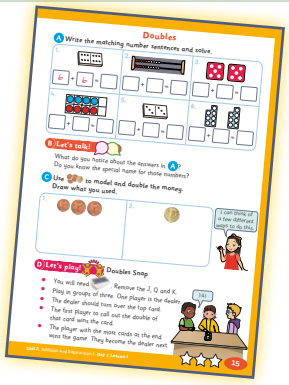
Let's strengthen

Some children will benefit from having a copy of the Calculation Strategy Wall Card for Doubles.

Let's deepen

Some children will be ready to make a connection between doubles and halves. For an added challenge, use the Unit 2 Let's Deepen PCM.

Pupil's Book page 15: Doubles



Optional consolidation and extension possibilities

Story Read *Double the Ducks* by Stuart J. Murphy, or listen to a reading at: edco.ie/4jfs

Games Bank Play 'Pass On Double'.

Strategy Wall Add the Calculation Strategy Wall Card for Doubles to the class Strategy Wall.

Let's Deepen Use the Unit 2 Let's Deepen PCM.

Review and Reflect Use the Prompt Questions Poster.

Day 4, Lesson 4

Near Doubles

Focus of learning (with Elements)

- Explores near doubles as an approach to support calculation strategies (U&C)
- Uses knowledge of simple fact groups (doubles and 10) to develop more calculation strategies (near doubling) (R)

Learning experiences	Equipment
D Digital activity: What Number Am I? D Animation: Double It (Part 2) *MAM* Routines: Reason & Respond, with Think-Pair-Share P Pupil's Book page 16: Near Doubles	• Playing cards • Classroom resources such as ten frames, base ten blocks, number shapes, counters, interlocking cubes, coins, rekenreks, dominoes and dice

Maths language

- between, near double, odd

Warm-up

D Digital activity: What Number Am I?

Play the interactive game, in which a series of audio clues are provided for each hidden number. Ask the children to record all possible answers on their MWBs. Ask or play the audio clues below, then click to reveal the hidden number.

Number 1

- I am a number between 5 and 10. Write all the possible answers on your MWB.
- I am a number between 7 and 9.
- I am a double. What number am I?

Number 2

- I am a number bigger than 10 and smaller than 16. Write all the possible answers on your MWB.
- I come after 12 on the number path. Delete all incorrect answers on your MWB.
- I am a double. What number am I?

Number 3

- I am a number less than 20 but more than 14. Write all possible answers on your MWB.
- To find me, start on 16 and count on 2.
- I am a double of 9. What number am I?

Number 4

- I am a number bigger than 9, but smaller than 22. Write all possible answers on your MWB.
- I have tens but 0 units. Delete all incorrect answers.
- I am a double of 10. What number am I?

Number 5

- I am a number bigger than 10 and smaller than 20. Write all possible answers on your MWB.
- I am an even number. Delete all incorrect answers on your MWB.
- I come before 18 and after 14 on the number line. What number am I?

Number 6

- I am a number between 20 and 30. Write all possible answers on your MWB.
- I am an odd number. Delete all incorrect answers on your MWB.
- I am more than 25 and less than 29. What number am I?

Alternatively, think of a number between 1 and 30, and provide your own clues.

Let's strengthen

Some children will benefit from the support of a number path.

Main event

D Animation: Double It (Part 2) *MAM* Routines: Reason & Respond, with Think-Pair-Share

Play the animation, in which Jay and Lexi are playing a (matching) game. Then, using Reason & Respond, refine the children's thinking and check for understanding of the key concept. Ask:

Assessment Opportunity

- What numbers did you see on the tiles the children were turning?
- How was it possible to win a chestnut? (If the children are unsure, replay the beginning of the animation.)
- What did the tiles show each time a chestnut was won?

- Is that a double?
- Is it close to a double?
- Which double is it close to? (Multiple answers are possible, as 4 + 5 is a near double for 4 + 4 and 5 + 5.)
- When all the number tiles have been turned, choose a number from the top row and write a near double using that number.
- Which near double did you write?
- Did anyone write a different near double?
- Model that near double using classroom resources.

Remind the children that *how* you get the answer (your strategy) is as important as the answer itself. Display the Doubles poster on the IWB. Write an equation with a near double on the IWB, choosing numbers in the lower range at first (e.g. 3 + 2 =). Using Think-Pair-Share, ask the children:

- Which double could help you get the answer?
- How would it help?
- Did anyone use a different double?
- Model that near double using classroom resources.

Continue to use Think-Pair-Share for other near doubles.

Draw the children's attention to the Calculation Strategy Wall Card for Near Doubles.

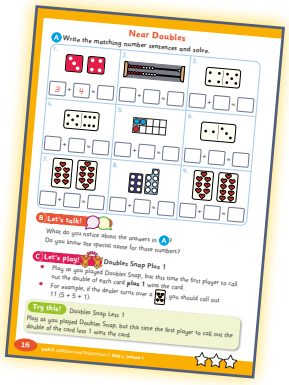
Let's strengthen

Children may benefit from using cubes or other manipulatives to have a visual representation of doubles.

Let's deepen

Some children may be ready to use doubles as a strategy when adding two-digit numbers with or without crossing the 10.

P Pupil's Book page 16: Near Doubles



Let's strengthen

For further practice of various addition strategies, including near doubles, see the Unit 2 Let's Strengthen PCM.

Optional consolidation and extension possibilities

Games Bank Play 'Spin and Win!'

Maths Eyes Find examples of doubles/even numbers and near doubles/odd numbers.

Strategy Wall Add the Calculation Strategy Wall Card for Near Doubles to the class Strategy Wall.

Review and Reflect Use the Prompt Questions Poster.

Days 5 and 6, Lesson 5

Subtraction as Take Away

Focus of learning (with Elements)

- Uses a range of strategies to subtract mentally to at least 10 (A&PS)
- Uses the minus symbol (–) to convey subtraction (C)

Learning experiences

- (D) Digital activity: Give the Dog a Bone!
- (D) Digital activity: What's Happening? (A) ***MAM* Routine: Reason & Respond**
- (C) Take Away Story: ***MAM* Routine: Build it; Sketch it; Write it**
- (C) Game: Take Away
- (D) Digital activity: What's Happening? (B) ***MAM* Routines: Think-Pair-Share, with Reason & Respond; Build it; Sketch it; Write it**
- (P) Pupil's Book page 17: Subtraction as Take Away

Equipment

- Classroom resources suitable for counting and models, such as ten frames and rekenreks
- Interlocking cubes or counters
- Sorting circles
- Matchsticks
- 1–6 spinners

Maths language

- take away, equals, subtraction, minus

Warm-up

(D) Digital activity: Give the Dog a Bone!

Open the resource, in which Monty is waiting for his bone! Then explain the rules of the game to the children:

- Choose one child to close their eyes while you hide an object in the room.
- The child finds the hidden object, while the rest of the class counts to 20, forwards and/or backwards, and relatively slowly.
- The further away the child is from the hidden object, the softer the children count. The closer, the louder they count.
- The challenge is to find the object before 20 is reached.
- If the child finds the object, they can feed Monty a bone on the IWB and get a 'woof' in return.

Main event

(D) Digital activity: What's Happening? (A)

***MAM* Routine: Reason & Respond**

Display the flipcards activity. For each card, begin by asking the children to look at the image on the front of the card. Then flip the card to show a development in the scenario.

Ask the children to explain what they think is happening. For each card, something is taken away in the image on the back of the card. Ask:

- Is this addition or subtraction?

Use revoicing and ask further questions, such as:

- How do you know?
- Do you agree? Why?
- Can anyone say it a different way?

Pause for some or all scenarios and ask the children to show using classroom resources.

(C) Take Away Story

***MAM* Routine: Build it; Sketch it; Write it**

Ask the children to think of their own take away story (no more than 10 items to begin).

- Build it! Use classroom resources to show your take away story.
- Sketch it! Show it as a sketch.

Conference with the children as they work, checking for use of key language: 'take away' and 'minus'. If the children do not use this language, introduce the idea of crossing out to indicate 'take away' in the sketch.

- Write it! Use words and/or numbers to record it (e.g. 8 balloons, 3 burst, 5 left).

Teaching tip

Take photos or videos to use in the warm-up for the Review and Reflect lesson.

Let's strengthen

Some children will need support in thinking of a take away story. Some children might only be ready to complete 'Build it' and 'Sketch it'.

Let's deepen

Some children will be ready to write their take away story as a number sentence.

C Game: Take Away

The children play in pairs. Each pair needs a 1–6 spinner. Each child places 10 classroom resources into a sorting circle. The children take turns to spin, and take that many objects from their sorting circle. Each player needs to spin the exact number to finish the game. The first player to have nothing left in their circle wins the game.

Let's deepen

Some children will be ready to use 20 classroom resources in the game.

D Digital activity: What's Happening? (B)

***MAM* Routines: Reason & Respond, with Think-Pair-Share; Build it; Sketch it; Write it**

Display the flipcards activity. For each card, begin by asking the children to look at the image on the front of the card. Then flip the card to show a development in the scenario.

Ask the children to explain what they think is happening. For each card, something is taken away in the image on the back of the card. Using Reason & Respond, ask:

- How do you know?
- Do you agree? Why?
- Can anyone say it a different way?

Using Think-Pair-Share, ask further questions, such as:

- How many are there altogether?
- How many are crossed out?
- What did the number sentence say?
- Is there a new symbol in the number sentence? (–)
- What does it mean?
- What does + mean?
- What does = mean?

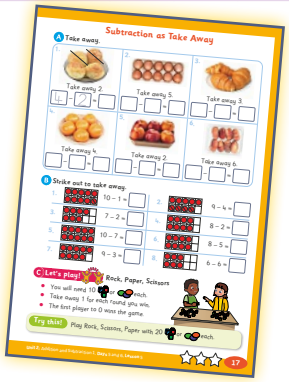
Using Build it; Sketch it; Write it, ask the children to use classroom resources and matchsticks to show what is happening.

Assessment Opportunity

Let's strengthen

Some children will benefit from using PCM 9: Number Sentence Template for 'Write it'. Some children may work better within 5 for the moment.

P Pupil's Book page 17: Subtraction as Take Away



Optional consolidation and extension possibilities

Games Bank Play 'Make 10', 'Cover Up Totals' and/or 'Add 10 Snap'.

Integration SPHE: Teach the children how to play hopscotch to embed the concept of counting on. Language: English: Read *Elevator Magic* by Stuart J. Murphy, or listen to a reading at: edco.ie/4pm5 PE: Play a game in which points are taken away from 10 and the winning team is the first to reach zero.

Story Read *Double the Ducks* by Stuart J. Murphy, or listen to a reading at: edco.ie/4jfs

Continue the Learning Use opportunities to describe 'take away', e.g. 'I had 8 pencils in my jar yesterday, I've lost 2, how many are left?'

Maths Journal Draw and/or write a take away story that happened to you.

Review and Reflect Use the Prompt Questions Poster.

Home/School Links Book Page 8 can be completed at any stage after this lesson.

Day 7, Lesson 6

Adding and Subtracting 0, 1 and 2

Focus of learning (with Elements)

- Explores and uses the zero property when performing calculations (U&C)
- Jumps forwards/backwards on a number line to demonstrate addition and subtraction (C)

Learning experiences

- (D) Digital activity: Move with Monty
- (D) Video: The Number Line – Part 2
  MAM Routine: Reason & Respond
- (C) Game: Towers Take Away
- (P) Pupil's Book page 17: Subtraction as Take Away

Equipment

- Classroom resources such as ten frames, number shapes and rekenreks
- Interlocking cubes
- Counters
- 0–9 spinners
- PCM 4

Maths language

- number path, number line, count back

Warm-up

(D) Digital activity: Move with Monty

Open the interactive resource, which features a barking Monty. You can select the number of barks or use the random mode. The children count the barks silently while standing, then jump that number of times, counting as they jump. Each jump counts as 1.

Ask:

- If you hold hands with a partner and jump at the same time, how many jumps at a time is that? (2 children and 1 jump per child = 2 jumps)
- Do it a second time. How many jumps is that? (4)
- Do it a third time. How many jumps is that? (6)
- Can you continue the pattern to 20?
- Let's jump and count using the pattern.

Teaching tip

If class numbers do not support even groups of two, use this as a teaching opportunity:

- When we jump with a partner, does everyone have a partner?
- How many children do not have a partner? Why/why not?
- How many more children would we need to make another group of 2?

Teaching tip

Adapt the activity for some children by allowing them to use a doll, action figure or teddy. Where space is an issue, one group of children could jump and the other children record the jumps using MWBs or rekenreks.

Teaching tip

Take photos or videos to use in the warm-up for the Review and Reflect lesson.

Main event

(D) Video: The Number Line – Part 2
MAM Routine: Reason & Respond

To refresh the children's understanding of the number line, play Part 2 of the Number Line video used in Unit 1, Lesson 3.

If the children have not already raised the following questions, ask:

- How did the video start? What did you see? (a number stack, then a number path to 30)
- What did you see at the end? (a number line)

- What is the same? (numbers)
- What is different? (not a path any more but a line; the numbers are different colours)
- What is the first/last number?
- Start at 1, say all the numbers to 30.

Distribute number lines to 30 to the children (see PCM 4). Display a physical number line to 30 or draw one on the board. Ask a child to choose a number between 10 and 30 on the number line. Ring it. Ask/say:

- How many tens? How many ones?
- Ring it on your number line.
- Make it using classroom resources, and a tens and ones model.
- Add one more.
- Ring that number on your number line. (Ring it on the number line on the board.)
- What do you notice? Did you move forwards or backwards on the number line? Why?
- Is that counting on or back? Explain.
- Have you now more/less ones or tens? Why?
- Write the number sentence (e.g. 16 + 1 = 17 or 18 – 2 = 16).

Repeat the above for 0, 1 less, 2 more, and 2 less.

Draw the children's attention to the Calculation Strategy Wall Cards for Add and Subtract 0, and Add and Subtract 1.

Teaching tip

The children could work in pairs, with one choosing a number between 10 and 30 and the other playing 'teacher'.

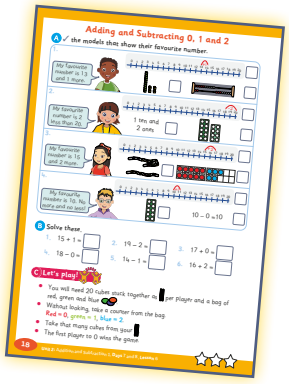
C Game: Towers Take Away

The children play in pairs. Each pair needs a 0–9 spinner and a quick cubes tower of 10. Each child spins twice (see below) and adds to or takes away from the tower of 10 as indicated. The child to reach 20 first, or to have the tallest tower when time is up, wins the game.

Spin 1: Land on an odd number = take away. Land on an even number = add.

Spin 2: Land on an odd number = add or take away 1. Land on an even number = add or take away 2. Land on 0 = remains 0.

P Pupil's Book page 18: Adding and Subtracting 0, 1 and 2



Optional consolidation and extension possibilities

Review and Reflect Use the Prompt Questions Poster.

Strategy Wall Add the Calculation Strategy Wall Cards for Add and Subtract 0, and Add and Subtract 1 to the class Strategy Wall.

Day 8, Lesson 7

Adding and Subtracting 10

Focus of learning (with Elements)

- Selects and shares mental strategies for addition and subtraction facts within 20 (A&PS)

Learning experiences

- D Digital activity: What Number Am I?
- C Concrete activity: Place Value Arrow Cards
- C Concrete activity: Adding and Subtracting 10 ***MAM* Routine: I Do, We Do, You Do**
- C Concrete activity: Add 10 ***MAM* Routine: Build it; Sketch it; Write it**

Equipment

- Ten frames, base ten blocks, number shapes
- Place value arrow cards
- PCM 10
- PCM 11

Maths language

- number sentence, digit

Warm-up

D Digital activity: What Number Am I?

Play the interactive game, in which a series of audio clues are provided for each hidden number, with an emphasis on tens and ones. Ask the children to children record all possible answers on their MWBs. Then click to reveal the hidden number.

Main event

C Concrete activity: Place Value Arrow Cards

Use place value arrow cards to physically model all the combinations of 10 plus a single-digit number.

Use reverse process to physically model all the numbers 11–19 and the effect of removing 10.

C Concrete activity: Adding and Subtracting 10

***MAM* Routine: I Do, We Do, You Do**

Provide the children with PCM 10: Number Stacks to 30 and base ten resources such as base ten blocks.

I Do: Show 6 ones on the board. Tell the children you want to add 10 more. Elicit suggestions as to how you might do this – add 10 ones, add 10 tens or add 1 ten? Ask:

- How many now altogether?
- How do you know?

Display a number stack to 30. Colour 6 on your number stack blue. Colour 16 green. Ask:

- What do you notice?

We Do: Repeat the steps above. This time the children use their base ten blocks and number stacks to add 9 and 10.

You Do: Ask the children to add 7 and 10.

Repeat the strategy for subtracting 10 (e.g. 12 – 10).

C Concrete activity: Add 10

***MAM* Routine: Build it; Sketch it; Write it**

Ask the children to add 10 to a variety of numbers between 1 and 20. For example:

- What is 5 + 10?
- Build it! Use classroom resources to build it.
- Sketch it! Show it as a sketch.
- Write it! Write it as a number sentence.

Conference with the children as they work. Ensure they have number stacks to 30. Ask:

- Show me 5 in the number stack.
- Show me 5 + 10 more.
- What do you notice?
- Have the ones changed at all when you added 5 + 10? Why not?
- Have the tens changed? How?
- Which digit changed in the numeral? Why?
- Show me 15 take away 10.
- What do you notice?
- Show me adding and subtracting 10, using place value arrow cards.
- Show me 10 plus every single-digit number, using place value arrow cards.
- What do you notice?
- Show me take away 10 from the numbers 11 to 19, using place value arrow cards.
- What do you notice?

Assessment Opportunity

Optional consolidation and extension possibilities

Games Bank Play 'Uncover! Cover!'.

Strategy Wall Add the Calculation Strategy Wall Card for Adding and Subtracting Tens to the class Strategy Wall.

Integration PE: Play a game in which 10 points are added or taken away.

Review and Reflect Use the Prompt Questions Poster.

Day 9, Lesson 8

Adding Using Friendly Facts

Focus of learning (with Elements)

- Uses knowledge of simple fact groups [doubles, bonds of 10] to develop more calculation strategies (adding three numbers) (R)

Learning experiences

- (D) Video: Maths Eyes in the Woodlands
  MAM **Routines: Notice & Wonder; Reason & Respond**
- (C) Concrete activity: Friendly Facts
  MAM **Routine: Build it; Sketch it; Write it**
- (P) Pupil's Book page 19: Adding using Friendly Facts

Equipment

- Classroom resources for counting such as interlocking cubes, links and counters
- Playing cards

Maths language

- friendly facts

Warm-up

(D) **Video: Maths Eyes in the Woodlands**
MAM **Routine: Notice & Wonder**

Play the video and ask:

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

Note any 'wonderings' that could become the basis for a subsequent maths investigation.

Main event

(D) **Video: Maths Eyes in the Woodlands**
MAM **Routine: Reason & Respond**

Play the video again, pausing where appropriate. Use the children's wonderings from the warm-up or guide them with questions, such as:

- How did Mia organise her acorns?
- Why, do you think, did she choose to bundle 10 acorns together?
- Would it have made sense to bundle another number, maybe 5 or 8?
- How did Monty help?

Repeat the routine for number bonds of 10.

Remind the children about the relevant Calculation Strategy Wall Cards.

(C) **Concrete activity: Friendly Facts**
MAM **Routine: Build it; Sketch it; Write it**

Ask the children to imagine they are in the woodlands, on the beach, in the playground or at school. They have collected some chestnuts/shells/pencils.

- Build it! Work with your partner and imagine that you are Mia and Lexi in the woodlands. Model a friendly fact. Add some more. Count on.
- Sketch it! Can you sketch it, using models such as ten frames?
- Write it! Write the number sentence. Ring the friendly fact.

Teaching tip

Go for a nature walk and role-play Mia and Lexi in the woodlands/school garden.

Teaching tip

Take photos or videos to use in the warm-up for the Review and Reflect lesson.

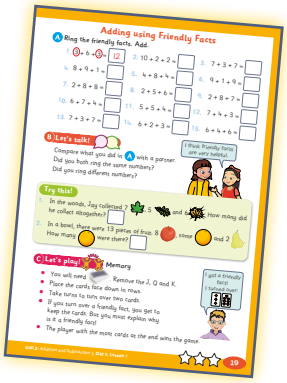
Let's strengthen

Some children will benefit from using the Calculation Strategy Wall Cards for Doubles, and Bonds of 10.

Let's deepen

Some children will be ready to find the missing value in a number sentence, when related to friendly facts.

P **Pupil's Book page 19: Adding using Friendly Facts**



Optional consolidation and extension possibilities

Maths Eyes Look for two numbers in the classroom/school environment which, together, make a friendly fact.

Integration STEM: Design, plan, make and evaluate a 'bug hotel'. SESE: Geography: Natural Environments: The Local Natural Environment.

Target Board Use PCM 11: Target Board for Addition and Subtraction.

Review and Reflect Use the Prompt Questions Poster.

Home/School Links Book Page 9 can be completed at any stage after this lesson.

Day 10, Lesson 9

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 play!
For Review and Reflect, use photographs and videos of the children engaged in activities such as 'Move with Monty', 'Build it; Sketch it; Write it' and Games. Also use stills from the digital resources. 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.	Play any of the games from the Games Bank.

Maths language	Maths strategies and models
Ask the children to explain the following terms (perhaps using examples or drawings on their MWBs): pattern, strategy, reasonable, symbol, number sentence, zero, number fact, branching bond, double, near double, estimate, friendly fact, turnaround fact, take away. 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? Complete the My Maths Fact File on pages 121–122 of the Pupil's Book.	Ask the children to give examples of the strategies they used in this unit: number facts/bonds of 10, doubles, near doubles, tens and ones, number line, turnaround facts, friendly facts and subtraction as take away. Ask the children to give and/or draw examples of the maths models they used in this unit (e.g. concrete materials such as interlocking cubes, rekenreks place value arrow cards). Which strategies and models did they prefer and why?
Progress Assessment Booklet	**Let's deepen**
Complete Questions 6–9 on pages 9–10. Alternatively, these can be left to do as part of a bigger review during the next review week.	Use the Unit 2 Let's Deepen PCM.
Let's strengthen	**Maths Eyes**
Identify children who might benefit from extra practice with some of the key concepts or skills in this unit. Use the Unit 2 Let's Strengthen PCM. Consult the Unit 2 Let's Strengthen Suggestions for teachers.	Go on a maths trail around the school and grounds. Ask the children to spot a single-digit number. On their MWBs, they use this number to make a friendly fact. Can they also find situations that could be represented as number sentences? For example: How many windows and how many doors can be seen?

Notes