Maths and Me: 1st Class – Short-Term Plan, Unit 8: Addition and Subtraction 2 (January: Weeks 1&2)

Strand(s) > Strand unit(s)	Number > Sets and Operations; Numeration and Counting; Place Value and Base Ten. Algebra > Patterns, Rules and Relationships; Expressions and Equations.
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; 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; identify and express relationships in patterns, including growing or shrinking shape patterns and number sequences; interpret the meaning of symbols or pictures in number sentences.

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	**Adding 10 and 9:** Uses knowledge of simple fact groups to develop further calculation strategies (R)		D Reason & Respond L1, 3–6 C Build it; Sketch it; Write it L1–2	**Intuitive Assessment:** responding to emerging misconceptions
2	**Subtracting 10 and 9:** Explores a range of approaches to support calculation strategies (U&C); Uses knowledge of simple fact groups to develop further calculation strategies (R)		D Give the Dog a Bone! L2 D C I Do, We Do, You Do L3 D Think–Pair–Share L4–5	
3	**Make Tens:** Explores a range of approaches to support calculation strategies (U&C)		D Notice & Wonder L4 C Spinners (0–9) L4 C D Write-Hide-Show L5–6	**Planned Interactions:** responding to insights gleaned from children's responses to learning experiences
4	**Fact Families:** Translates representations into written addition or subtraction number sentences or expressions (C); Demonstrates, justifies, explains and argues the commutative property in relation to addition facts (R); Begins to develop an understanding of addition and subtraction as being the inverse of each other (U&C)		C Spinners and 1c Coins L5 D Would This Work? L6 C The Sound of a Number L7	
5	**Subtraction as Difference:** Demonstrates subtraction as difference using a variety of models and strategies (U&C); Translates representations into written subtraction number sentences or expressions (C); Begins to use a number line to demonstrate difference and bridging through 10 (C)		D Toolkit: What's My Number? L7 C Stations L7	
6	**Just Tens:** Adds and subtracts multiples of tens within 100 (U&C); Counts multiples of tens from a given multiple using verbal, concrete and pictorial supports (U&C)		**Print resources** Pupil's Book pages 54–60 Home/School Links Book pages 21–22 PCMs 35, 36	**Assessment Events:** information gathered from completion of the unit assessment in the Progress Assessment Booklet page 17
7	**Adding and Subtracting Tens with Two-digit Numbers:** Counts forwards and backwards in tens from any given number using verbal, concrete and pictorial supports (U&C); Explores patterns and numerical relationships in addition and subtraction of tens on a hundred square (U&C); Constructs number sentences and number stories to solve problems involving addition and subtraction within 99 (A&PS); Justifies the selection and use of operations [addition and subtraction] in a variety of contexts (R)			
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 8 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 8 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed on the next page.) • See Unit 8 Let's Strengthen PCM. • See Unit 8 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- This unit is a two-week block of content, located in January. A two-week block gives enough time to review and reflect with the children on the language and concepts in Addition and Subtraction 1, while introducing new concepts in a structured, playful and real-life manner.

- This unit is specifically positioned to come after Numbers to 100, building on previous knowledge gained, including counting forwards and backwards, place value, and modeling, representing and describing numbers in terms of tens and ones.

- As was the case in Unit 2 Addition and Subtraction 1, this unit is concerned largely with the strand unit of Sets and Operations. It also includes learning experiences from: Patterns, Rules and Relationships; Numeration and Counting; Expressions and Equations; and, to a lesser extent, Place Value and Base Ten.

- Models and representations familiar to the children, such as branching bonds, number lines and ten frames will continue to inspire confidence and fluency amongst the children for the assigned tasks.

- The children will continue to use a range of *MAM* Routines, including: Build it; Sketch it; Write it, and I Do, We Do, You Do. This will lend them confidence in tackling new concepts. The emphasis is on conceptual knowledge, mental calculation skills and confidence in exploring and determining the most efficient strategies.

- As mentioned in previous number units, 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, 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 PE hall or yard, while children are tidying up after breaks, and/or when they are going home.

Common misconceptions and difficulties

See the Common Misconceptions and Difficulties section for Unit 2 Addition and Subtraction 1. The points below are also relevant.

- The children may be overly reliant on less efficient strategies such as counting all or counting on in ones, which they may also miscount.
- The children may only read the = symbol as 'makes' and not appreciate its real meaning (i.e. that the expression or number on one side of the symbol is equal to or the same value as that on the other side).
- The children may only read the – symbol as 'take away', as opposed to subtract or minus, and not appreciate that there are types of subtraction other than removal/deduction.
- The children may not appreciate how known facts can be applied to unknown facts to solve them. (For example: If I know that 4 + 5 = 9, then 14 + 5 = 19.)
- The children may struggle to recall known facts, or may only confidently recall a small number of known facts.
- The children may incorrectly count on or back on the number line by 'double counting' the starting number.
- The children may add the digit total for each number, rather than considering the place value of each digit, for example, for 42 + 12, the child suggests an answer of 63.

The Unit 8 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

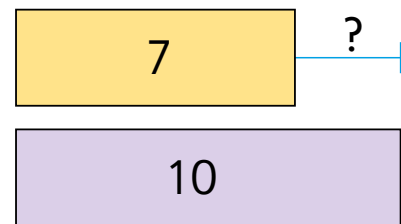## Mathematical models and representations

- Interlocking cubes
- Base ten blocks
- Quick cubes (pictorial; representations of base ten blocks)
- Number lines
- Number paths
- Stacked number paths
- Branching bonds
- Bar models
- Place value grids
- Number sentences
- Rekenreks
- Ten frames
- Place value arrow cards
- Coins
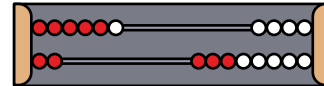
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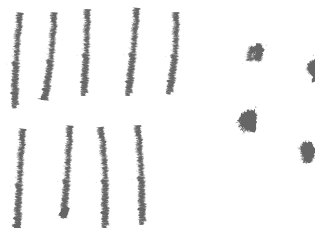
Quick cubes

Bar model

Teaching tip

Base Ten Blocks, Number Lines, Number Paths, Branching Bonds, Bar Models, Place Value Grids and Ten Frames 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

Adding 10 and 9

Focus of learning (with Elements)

- Uses knowledge of simple fact groups to develop further calculation strategies (R)

Learning experiences

- **D** Digital activity: The Wind Blew 10 (Part 2)
  MAM Routine: Reason & Respond
- **C** Concrete activity: Add 10 to Add 9
  MAM Routine: Build it; Sketch it; Write it
- **P** Pupil's Book page 54: Adding 10 and 9

Equipment

- Classroom resources such as cubes, rekenreks and number shapes
- Number lines
- Ten frames
- Counters

Maths language

- whole, part, model, number line, add, less, number sentence

Warm-up

D **Digital activity: The Wind Blew 10 (Part 2)**
MAM Routine: Reason & Respond

Play the slideshow, which shows Mia and Lexi gathering fallen chestnuts in the forest.

Assessment Opportunity

For each slide, ask the children to complete the branching bonds on their MWBs. Ask/say:

- What is the whole number?
- What does that tell you? (how many chestnuts fell altogether)
- Write that number in the branching bond.
- Which numbers are not the whole but just part?
- What do these part numbers tell you? (how many chestnuts fell to Lexi and to Mia)
- Write those numbers in the branching bond.

When all the slides have been shown, ask:

- What number facts did you write in the branching bonds?

Record all the answers, including those that are incorrect, on the IWB in a random order. Then ask:

- Are any of these number facts telling me the same thing in a different way? (e.g. 8 + 2 = 10 and 2 + 8 = 10)
- Will you get the same answer to 8 + 2 and 2 + 8? Why? Prove it.
- What does 0 + 10 = ? Prove it.
- Can you write a list of these facts on your MWB and put them in order?
- Did you write the facts in a particular order? Why?

Teaching tip

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

Let's strengthen

Some children will benefit from using PCM 8: Branching Bonds Template while working on the warm-up activity.

Main event

C **Concrete activity: Add 10 to Add 9**
MAM Routine: Build it; Sketch it; Write it

- Build it! Choose resources to model a one-digit number add 10, e.g. 6 + 10. Remove 1 from 10 to model 6 + 9.

- Sketch it! Represent both models using sketches/ drawings. For example, on a number line show a jump of 10 from 6, then a jump of 9 from 6.
- Write it! Represent both models using branching bonds and number sentences. Show them on the open number line.

Repeat with other combinations of one-digit numbers plus 10 and incorporate other resources (e.g. number shapes, cubes).

Conference with the children as they work, checking for understanding of key language and concepts. Ask:

- Which resource have you chosen? Why?
- Which model shows 10 + 6?
- Which shows 9 + 6?
- What did you move? Why?
- Why is the answer to adding 9 one less than the answer to adding 10?
- Why does 'think 10' help when adding 9?
- What other clever ways to work things out do you know?
- Write the number sentence 10 + 6 = 16 in another way.

Teaching tip

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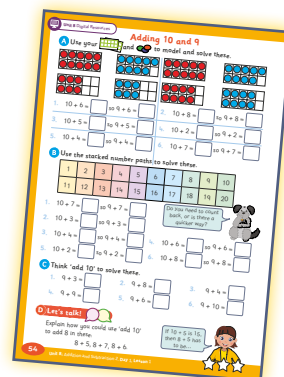
Let's strengthen

Support the children by providing pre-made models showing add 10 and add 9. What is the same? What is different?

Some children may be able to 'Build it' only.

Let's deepen

Challenge the children to extend the approach to adding 8.

P **Pupil's Book page 54:** **Adding 10 and 9**

Optional consolidation and extension possibilities

Games Bank Play 'Make 10' or '9 or 10 to Win!'

Strategy Wall Add the Calculation Strategy Wall Card for Adding 10 and 9 to the class Strategy Wall.

Day 2, Lesson 2

Subtracting 10 and 9

Focus of learning (with Elements)

- Explores a range of approaches to support calculation strategies (U&C)
- Uses knowledge of simple fact groups to develop further calculation strategies (R)

Learning experiences

D Digital activity: Give the Dog a Bone!

C Concrete activity: Subtract 10 to Subtract 9
MAM **Routine: Build it; Sketch it; Write it**

P Pupil's Book page 55: Subtracting 10 and 9

Equipment

- Base ten blocks and other base ten resources
- Ten frames and counters
- Stacked number paths to 20
- Number lines to 20

Maths language

- minus, subtract, take away

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 child is, 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).

Main event

C Concrete activity: Subtract 10 to Subtract 9
MAM **Routine: Build it; Sketch it; Write it**

- Build it! Use base 10 resources (such as base ten blocks) to model the strategy. For example, for $19 - 9$, first work out $19 - 10$, and then 'give one back' to show $19 - 9$.

Assessment Opportunity ✓

- Sketch it! Represent both models using sketches/ drawings. For example, on stacked number paths to 20, show backwards jumps from 20 to 9, and then 'give one back' to show $19 - 9$.
- Write it! Represent both models using number sentences. Show them on the number line.

Repeat with other combinations of two-digit numbers, 20 and less, subtracting 10 and 9.

Teaching tip

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

Conference with the children as they work. Check for understanding of key language and concepts. Ask:

- Which model shows $19 - 10$?
- Which shows $19 - 9$?
- You took away a ten block. Is that the same as taking away 1 or 10? Why?
- Why did you 'give one back'?
- Why is the answer to subtracting 9 one more than the answer to subtracting 10?
- Why does 'think 10' help when subtracting 9?
- Do you know any other clever ways to work things out?

- What do you notice about subtracting 10 on the stacked number paths? Do you need to count back 10?
- How do you 'give one back' on the number path?
- Which symbol shows subtraction in your number sentence?

Let's strengthen

Some children will work with take away 10 only, or may work in a simple way with the 'Build it' and 'Sketch it' steps only. The children would benefit from having a template for the number sentence (see PCM 34: Addition and Subtraction Templates).
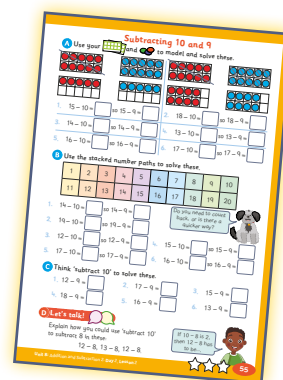
Let's deepen

Challenge the children to 'think 10' to take away 8.

Teaching tip

Draw the children's attention to the Calculation Strategy Wall Card for Add and Subtract 10.

P Pupil's Book page 55: Subtracting 10 and 9

Optional consolidation and extension possibilities

Games Bank Play 'Uncover! Cover!'

Story Read *Sparrows Singing* by Megan Atwood.

Strategy Wall Add the Calculation Strategy Wall Card for Subtracting 10 and 9 to the class Strategy Wall.

Day 3, Lesson 3

Make Tens

Focus of learning (with Elements)

● Explores a range of approaches to support calculation strategies (U&C)

Learning experiences

D Animation: Make 10 *MAM Routine: Reason & Respond*

D **C** Toolkit: Make 10 for Clever Adding
MAM Routine: I Do, We Do, You Do

P Pupil's Book page 56: Make Tens

Equipment

● Stacked number paths to 20
● Number lines to 20
● Ten frames and counters or other base ten resources

Maths language

● solve

Warm-up

D **Animation: Make 10**
MAM Routine: Reason & Respond

Play the animation, pausing at each set of ten frames to ask the children the following questions:

● How many counters in the first frame?
● How many in the second?
● Model these on your ten frames.
● Write a number sentence for that on your MWBs.
● Why did one counter move from one frame to the other?
● How many in the first frame now?
● How many in the second frame?

● Model these on your ten frames.
● What is the number sentence now? Write it on your MWBs.
● How did moving one counter help?
● Use a stacked number path and/or a number line to solve it.

Let's strengthen

Children will benefit from pre-set ten frames.

Let's deepen

Challenge the children to solve adding a one-digit number to a two-digit number.

Main event

D **C** **Toolkit: Make 10 for Clever Adding**
MAM Routine: I Do, We Do, You Do

I Do:

Open the Ten Frames tool from the Manipulatives e-Toolkit. Model a one-digit + one-digit equation, where one digit is 9.
For example: Take the following approach for 8 + 9.

Assessment Opportunity

● Write the equation in the format '8 + 9 = ☐'.
● Tell the children you will show them how to solve this using the ten frames and then you will complete the equation.
● Move 1 counter from the 8 frame to the 9 frame, explaining you are doing so to make a 10. Why? Because adding with 10 is a clever way to do things.

- Moving on to the equation, draw a curved line from the 8 to the 9. You are doing so to show that you are moving one from the 8 to the 9, just like you did on the ten frames.
- Write '1' below the curve. Cross out the 8, and write '7' below it.
- Explain that you are doing so because, since you have moved 1, you no longer have 8 but 1 less, which is 7.
- Cross out the 9 and write '10' below it.
- Explain that you are doing so because you no longer have 9 but 1 more, which is 10, as you moved 1 over from the 8.
- Now you can use your clever way to solve things: 7 + 10 = 17.
- Show this using a stacked number path. Explain that you are moving directly down the stacked number paths from 7 to 17 and that is exactly 10 more.
- Prove this by counting on from 7 to 17.

We Do:

- Write '9 + 3' on the board. The children need ten frames or other base ten resources and their MWBs.
- Ask the children to work in pairs to solve it using the same clever way again and to show their work with a number sentence.
- Conference with them as they work, asking them to justify each step.

You Do:

- Write '7 + 9' on the board. Ask the children to solve it independently, using the same clever way as before.
- Conference with them as they work, asking them to justify each step, to show their work with a number sentence, and to solve it using the stacked number paths.

Repeat the 'I Do, We Do, You Do' routine for other similar calculations.

Let's strengthen

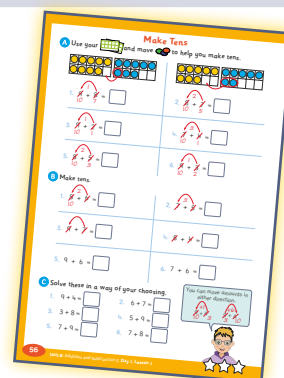Some children will benefit from working with the ten frames only.

Let's deepen

Challenge the children to extend their thinking to solve 19 + 7, 17 + 6, etc.

Teaching tip

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

(P) **Pupil's Book page 56: Make Tens**

Optional consolidation and extension possibilities

Games Bank Play 'Make 10'.

Maths Journal Write and draw more examples of 'Make Tens'.

Target Board Use PCM 33: Make Tens Target Board.

Days 4 and 5, Lesson 4

Fact Families

Focus of learning (with Elements)

- Translates representations into written addition or subtraction number sentences or expressions (C)
- Demonstrates, justifies, explains and argues the commutative property in relation to addition facts (R)
- Begins to develop an understanding of addition and subtraction as being the inverse of each other (U&C)

Learning experiences

- **D** Digital activity: Turn It Around *MAM* **Routine: Notice & Wonder**
- **D** Digital activity: Turn It Around *MAM* **Routines: Reason & Respond, with Think-Pair-Share**
- **C** Concrete activity: Spinners (0–9)
- **P** Pupil's Book page 57: Fact Families

Equipment

- Ten frames
- 0–9 spinners

Maths language

- operation, fact family, total

Warm-up

D Digital activity: Turn It Around
MAM Routine: Notice & Wonder

Display the flipcards activity. Show each card and ask:

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

Take note of the children's wonderings to refer to in Reason & Respond in the activity below.

Main event

D Digital activity: Turn It Around *MAM* Routines: Reason & Respond, with Think-Pair-Share

Display the flipcards activity. Show the cards one at a time. The children use Think-Pair-Share to respond to the following questions:

- What does the front side of card 1 show?
- What numbers do you see?
- What symbols do you see?
- What kind of operation is it: addition or subtraction?
- Show me that operation using a classroom resource of your choosing.
- What does the other side of card 1 show?
- What numbers do you see?
- Have you seen those numbers already?
- How were they used before?
- How are they used now?
- Can you explain that to me?
- What is different? (symbol)
- Would you agree that you can use the numbers in an addition sentence to make a subtraction sentence? Prove it.
- Would you agree that you can use the numbers in a subtraction sentence to make an addition sentence? Prove it.
- If I turn around 7 + 8 = 15 to 8 + 7 = 15, can I use the same numbers to make a subtraction sentence?

- Write it.
- How many number sentences altogether for this family of numbers?
- Together these four number sentences make a fact family.

Repeat with the other two cards.

Teaching tip

Use revoicing to embed the concept and to allow the children to practise justifying a concept.

C Concrete activity: Spinners (0–9)

Working in pairs, the children take turns to spin a 0–9 spinner twice. They total the two numbers and work together to find other facts for that family of numbers, making representations of each fact using resources of their choosing (such as ten frames). Conference with the children as they work. Check for understanding of key language and concepts. Ask:

Assessment Opportunity

- What numbers did you add together?
- What was the total when added together?
- What strategy did you use? (number bonds of 10, doubles, near doubles)
- What different strategy did you use to check your answer?
- What resource did you use?
- Can you write a number sentence for that?
- What symbols did you use? Why?

- If I turnaround 7 + 8 to 8 + 7, will I get the same answer? Why?
- Can you write a subtraction sentence using the same numbers?
- How can 9 + 8 = 17 help you answer 17 – 8? Give me another example of that strategy.
- What symbols did you use? Why?
- How many facts altogether in this fact family?

Let's strengthen

The children may benefit from working within addition facts only. See PCM 34: Addition and Subtraction Templates to support the recording of number sentences. The children may also benefit from a branching bond template (see PCM 8) or a bar model template (see manipulative printables).

Teaching tip

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

Let's deepen

Challenge the children to write addition sentences in another way besides 9 + 5 = 15, e.g. 15 = 9 + 5. Some children may be ready to explore whether the order of numbers in a subtraction sentence is important. For example: Can 9 – 7 be written as 7 – 9?

(P) Pupil's Book page 57: Fact Families
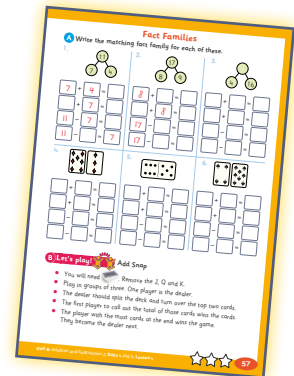
Optional consolidation and extension possibilities

Strategy Wall Add the Calculation Strategy Wall Card for Subtracting Using Addition to the class Strategy Wall.

Home/School Links Book Page 21 can be completed at any stage after this lesson.

Maths Journal Write a fact family for your favourite number between 1 and 20. Draw representations of each fact.

Day 6, Lesson 5

Subtraction as Difference

Focus of learning (with Elements)

- Demonstrates subtraction as difference using a variety of models and strategies (U&C)
- Translates representations into written subtraction number sentences or expressions (C)
- Begins to use a number line to demonstrate difference and bridging through 10 (C)

Learning experiences

- **(C)** Concrete activity: Spinners *MAM Routine: Write-Hide-Show*
- **(D)** Digital activity: What's the Difference? *MAM Routines: Reason & Respond, with Think-Pair-Share*
- **(C)** Concrete activity: Spinners and 1c Coins
- **(P)** Pupil's Book page 58: Subtraction as Difference

Equipment

- 0–9 spinners
- Number lines
- 1c coins

Maths language

- difference

Warm-up

C **Concrete activity: Spinners**
MAM Routine: Write-Hide-Show

In pairs, the children take turns to spin two 0–9 spinners and they:

- Write: Record the numbers as a fact family on their MWBs.
- Hide: Turn the MWBs over.
- Show: They show their answers.

Elicit from the children the number sentences in their fact families. It will not be possible to record the work of all pairs, so choose some examples, and write the answers on the board without giving weight to any particular answer. It may be that all children record the addition sentence as first number + second number = total (e.g. 4 + 9 = 13). If it is not suggested by the children, add 9 + 4 = 13.

Ask the children which strategy they used for adding and subtracting. The focus is to practise any and all strategies and to remind the children of the commutative nature of addition. Ask:

- Which strategy did you use?
- Did anyone use the 'turnaround' strategy – putting the bigger number first?
- How would the turnaround strategy help?
- Is the answer the same whichever order you add the numbers in? Why?
- Is turnaround the best strategy for adding these two numbers or would another strategy work better?
- What strategy did you use for subtracting? Show me, using a resource of your choosing.
- Can you turn around a subtraction sentence?

Continue with the activity for a suitable length of time.

Let's strengthen

The children might benefit from having a number line (see manipulative printables).

Main event

D **Digital activity: What's the Difference?**
MAM Routines: Reason & Respond, with Think-Pair-Share

Play the first four slides of the slideshow, pausing at each one. Ask/say:

Assessment Opportunity

- Which is more?
- Which is less?
- Is there a difference?
- Use classroom resources of your choosing to build a model to show what you see.
- Can you see the difference using your Maths Eyes? How many is that?

Play the next five slides, pausing at each one. Ask/say:

- Which is more? How many is that?
- Which is less? How many is that?
- Is there a difference?
- Use classroom resources of your choosing to build a model to show what you see.
- Can you see the difference using your Maths Eyes? How many is that?
- Use your number line. Start at the bigger number, then count back by the smaller number. What number did you arrive at?
- What do you notice about that number? Is it the same as the difference?

- You used count back/subtraction to find the difference. Write the number sentence.

Ask the children to explain it to you. Use revoicing to embed the concept.

C **Concrete activity: Spinners and 1c Coins**

The children spin a 0–9 spinner and line up that number of 1c coins. They spin again and line up that number of 1c coins, directly below the first line of coins, matching coin to coin (as far as this is possible). Using the longer line of coins like a number line, they count back to find the difference. They record the number sentence on their MWBs.

Conference with the children as they work. Check for understanding of key concepts and language. Ask/say:

- How many coins in the top line?
- How many coins in the bottom line?
- Have you matched them correctly?
- Can you see the difference using your Maths Eyes?
- Use 'count back on the number line' to find the difference.
- Is it the same answer as your Maths Eyes estimate?
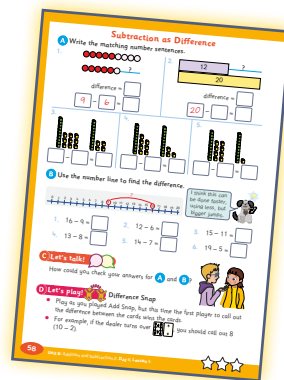- Can you say/write the number sentence?

Teaching tip

This activity can also be done with rekenreks or interlocking cubes.

Let's strengthen

Some children will not be ready to record number sentences.

Let's deepen

Challenge the children to use 2c coins. What is the difference in the amounts of money?

P **Pupil's Book page 58: Subtraction as Difference**

Optional consolidation and extension possibilities

Games Bank Play 'Number Line Subtraction'.

Concept Map The children make a concept map for subtraction as difference.

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

Continuing the Learning When making teams, line up the children in two rows. Match the children one-to-one but have a different number of children to each row. Ask the children to work out the difference between the two rows.

Day 7, Lesson 6

Just Tens

Focus of learning (with Elements)

- Adds and subtracts multiples of tens within 100 (U&C)
- Counts multiples of tens from a given multiple using verbal, concrete and pictorial supports (U&C)

Learning experiences

D Digital activity: Estimate and Count
MAM **Routines: Reason & Respond, with Write-Hide-Show**

D Digital activity: Just Tens
MAM **Routines: Would This Work?, with Reason & Respond**

P Pupil's Book page 59: Just Tens

Equipment

- 100 squares
- Classroom resources (e.g. base ten blocks or interlocking cubes)

Maths language

- solution, related facts

Warm-up

D **Digital activity: Estimate and Count**
MAM **Routines: Reason & Respond, with Write-Hide-Show**

Display each slide. Say/ask:

- Make a reasonable estimate.
- Make an unreasonable estimate.
- Make your best estimate.
- What was your strategy?

Reveal the count. Compare the children's estimates to the count.

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Main event

D **Digital activity: Just Tens** *MAM* **Routines: Would This Work?, with Reason & Respond**

Display the image. Listen to each character's solution, one by one, and allow time for the children to respond.
Ask/say:

- Would this solution work?
- Prove it.
- Write the number sentence.

The children work in pairs using classroom resources to prove or disprove each solution. Conference with the children as they work. Check for understanding of key language and concepts. Ask:

- What numbers are you adding together?
- What symbols are you using?
- How many tens? How many ones?
- Can I write 6 tens as 6? Why not?
- If I know 2 ones and 4 ones is 6 ones, how can this help? (related facts)
- Which strategies work?
- Which is the best strategy? Why?
- Can you think of another strategy? (turnaround)
- Show me 20 + 40 on the 100 square.

At the end of each proof, show the children how the number sentence for each may also be written using the column method.

When finished, write '90 − 40' on the board and ask the children to use classroom resources to find different ways to solve it. The children record their findings using the column method. Conference with the children as they work. Check for understanding of key language and concepts. Ask/say:

- What operation are you doing?
- What symbols are you using?
- Which is the bigger/smaller number?
- Can I turnaround a subtraction sentence?
- What is a related fact for 90 − 40 ? (9 − 4)
- Show me 90 − 40 on the 100 square.

Let's strengthen

Some children will work with addition only and record using the horizontal method (or you can provide a tens and ones grid – see PCM 5). The children may also focus on just one strategy for now, and grow confident in that.

Let's deepen

Challenge the children to extend their thinking by adding two two-digit numbers without renaming, using the column method.

Assessment Opportunity

P **Pupil's Book page 59: Just Tens**
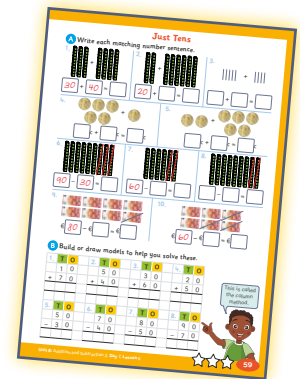
Optional consolidation and extension possibilities

Estimation Station Provide bags/containers of cubes, beads or coins and sticky notes or similar. Ask the children to record their estimate of how many tens. At the end of the unit, count the resources. Compare the result with the children's estimates.

Pattern Station Provide classroom resources (e.g. cubes, beads) in different colours and sizes and ask the children to make patterns of 10.

Strategy Wall Add the Related Facts Strategy Wall Card to the class Strategy Wall.

STEM Use the Amazing Tens activity printable.

Home/School Links Book Page 22 can be completed at any stage after this lesson.

Days 8 and 9, Lesson 7

Adding and Subtracting Tens with Two-digit Numbers

Focus of learning (with Elements)

- Counts forwards and backwards in tens from any given number using verbal, concrete and pictorial supports (U&C)
- Explores patterns and numerical relationships in addition and subtraction of tens on a hundred square (U&C)
- Constructs number sentences and number stories to solve problems involving addition and subtraction within 99 (A&PS)
- Justifies the selection and use of operations [addition and subtraction] in a variety of contexts (R)

Learning experiences

- **C** Concrete activity: The Sound of a Number
- **D** Toolkit: What's My Number?
- **C** Concrete activity: Stations
- **P** Pupil's Book page 60: Adding and Subtracting Tens with Two-digit Numbers

Equipment

- 0–9 spinners
- Place value arrow cards
- 1c, 2c, 5c and 10c coins
- PCM 35
- Counters

Maths language

- how much?, numeral, above, below, column, right, left, digit

Warm-up

C Concrete activity: The Sound of a Number

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

- These are 1c coins.
- How many coins?
- How much money?

Now ask the children to open their eyes and watch you remove some coins. Ask/say:

- How many coins are left?
- How much money is left?
- Write a number sentence. Which symbol will you choose? Why?

Drop 2c coins into the jar. Ask/say:

- These are 2c coins.
- How many coins?
- How much money?

Now ask the children to open their eyes and watch you remove some coins. Ask/say:

- How many coins are left?
- How much money is left?
- Write a number sentence. Which symbol will you choose? Why?

Drop 5c coins into the jar. Ask/say:

- These are 5c coins.
- How many coins?
- How much money?

Now ask the children to open their eyes and watch you remove some coins. Ask/say:

- How many coins are left?
- How much money is left?
- Write a number sentence. Which symbol will you choose? Why?

Drop 10c coins into the jar. Ask/say:

- These are 10c coins.
- How many coins?
- How much money?

Now ask the children to open their eyes and watch you remove some coins. Ask/say:

- How many coins are left?
- How much money is left?
- Write a number sentence. Which symbol will you choose? Why?

Finally, show the children the empty jar and ask them to write a numeral which shows that the jar is empty.

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Main event

D 🌐 **Toolkit: What's My Number?**

Open the Manipulatives e-Toolkit and select the 100 Square tool. Start simply by asking the children to follow the clues and write their answer on their MWBs. Examples:

- I am the number above/below (a given number).
- I am the number 1/2/3 columns above/to the right/to the left of (a given number).
- I am the number which is 10/20/30 more/less than (a given number).

Teaching tip

'What's My Number?' could be teacher-led, with one child giving clues to the rest of the class.

Let's strengthen

Children may benefit from also looking at the 100 square on the inside cover of their Pupil's Book.

Let's deepen

Challenge the children to write 'What's My Number?' as a number sentence.

C **Concrete activity: Stations**

Station 1: Spin and Colour

This station is suitable for groups of 2–4. Distribute PCM 35: 100 Square to each child.

The children take turns to spin the 0–9 spinner. They colour the column in the 100 square which has that number of ones.

If that column is coloured already, they miss a turn.

Use different colours for each column. The first child to colour all of the columns wins the game.

Ask:

- What is different in each column?
- What is the same in each column?
- What patterns can you see?

Station 2: Counter Act!

This station is suitable for groups of 2–4. Distribute PCM 35 and ten counters to each child.

The children place their counters on any ten numbers on the 100 square. (If there are 3 or 4 players, they can place more counters.)

The children take turns to spin two 0–9 spinners. They make a two-digit number. Their aim is to match their two-digit number to one of the covered numbers on the 100 square.

The children can use the two-digit number from their spin. Or they can use that number and add/subtract 10 (or multiples of 10) to reach a different number. They uncover the number to win the counter.

If it is not possible to uncover a number, they miss a turn.

The player with the most counters wins the game.

Station 3: Three in a Row

This station is suitable for groups of 2–4.

The children take turns to spin two 0–9 spinners. They make a two-digit number.

The children can use the two-digit number from their spin. Or they can use that number and add/subtract 10 (or multiples of 10) to reach a different number. They represent the number using place value arrow cards.

The first player to make three consecutive numbers wins the game.

Station 4: Colour Dash

This station is suitable for groups of 2–4. Distribute PCM 35 to each child.

The children take turns to spin two 0–9 spinners. They make a two-digit number.

The children can use the two-digit number from their spin, or they can use that number and add/subtract 10 (or multiples of 10) to reach a different number. They colour the number on the 100 square.

The first player to colour a row, column or diagonal line of numbers wins the game.

Let's strengthen

The children may benefit from adding and subtracting 10 only (i.e. rather than multiples of 10).

P **Pupil's Book page 60: Adding and Subtracting Tens with Two-digit Numbers**
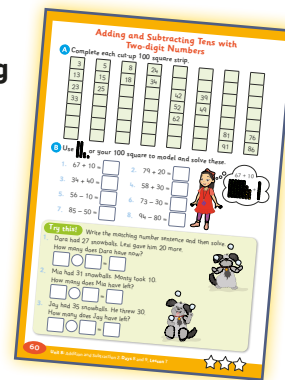
Let's strengthen

For further practice of adding and subtracting tens with two-digit numbers, use the Unit 8 Let's Strengthen PCM.

Optional consolidation and extension possibilities

Discussion Display the photos of the children's work in this unit and allow time for a class discussion.

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

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 play!
Review and Reflect Poster: Use Think-Pair-Share alongside the prompt questions to review the unit.	Choose a game 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): minus, take away, subtraction, solve, turnaround facts, fact families, more, less, difference, prove, solution, tens, ones, numeral, column, digit. Use the Unit 8 Maths Language Cards to revise the key terms. For example: If the image and text are cut apart, can the children match them? If not completed already, complete the My Maths Fact File on page 121 and on the top of page 122 of the Pupil's Book.	Ask the children to give examples of the strategies they used in this unit: ● Add 10 to add 9 ● Number bonds of 10 ● Doubles and near doubles ● Friendly facts ● Turnaround facts ● Make 10 ● Fact families ● Subtraction as difference ● Adding/subtracting 10/multiples of 10. 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, number lines, place value arrow cards, 100 squares). Which strategies and models did they prefer and why?

Progress Assessment Booklet	Let's create!
Complete Questions 33–36 on page 17. Alternatively, these can be left to do as part of a bigger review during the next review week.	Set up stations with: • Branching bonds • Number lines • Ten frames • Cubes, counters, etc. • Tens and ones grids. Use PCM 36: Task Card Templates to place task cards at each station. (Fill in suitable numbers before distributing.) The children work on representing the fact families, completing the number path tasks, and solving the equations using different models.
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 8 Let's Strengthen PCM. Consult the Unit 8 Let's Strengthen Suggestions for Teachers.	Use the Unit 8 Let's Deepen PCM.

Notes