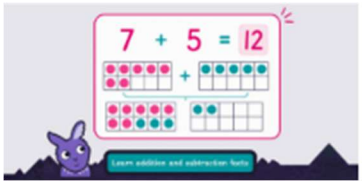


INSTRUCTIONAL GUIDANCE: ADDITION & SUBTRACTION

Teaching guidance and background

ENSSA assesses Year 1 students' developing accuracy and fluency with addition and subtraction number facts. These tasks draw on students' understanding of part-part-whole relationships, counting strategies, efficient derived-fact strategies and, over time, automatic recall.

This guidance is linked to the Year 1 Number Facts Addition and Number Facts Subtraction subtests. Foundation teachers should use the Decomposition guidance as the main recommendation for early number operations, but may draw on this guidance when students are ready for addition and subtraction facts.

What it looks like

Students are developing arithmetic when they can solve, explain, and increasingly recall addition and subtraction facts using number relationships rather than relying only on counting-by-ones.

This may look like:

Increasingly fluent recall of number facts, including part-part-whole facts and doubles within 20

- "___ and ___ make ___.
- "___ plus/add ___ is equal to ___.
- "___ take away/minus/subtract ___ is equal to ___.
- "The difference between ___ and ___ is ___.
- "___ is ___ more than ___.
- "Double ___ is ___.

Using number fact strategies to solve more difficult two-digit problems more efficiently

- "I broke ___ apart into ___ and ___ to solve the problem.
- "I used the double ___ + ___ = ___ to help me solve ___ + ___.
- "I used ___ to help me solve ___.
- "I know ___, so I can work out ___.

Explaining how they solved an addition or subtraction problem

- "First I ___, then I ___.
- "I know the answer is ___ because ___.
- "The parts are ___ and ___. The whole is ___.
- "I used the strategy ___ because ___.

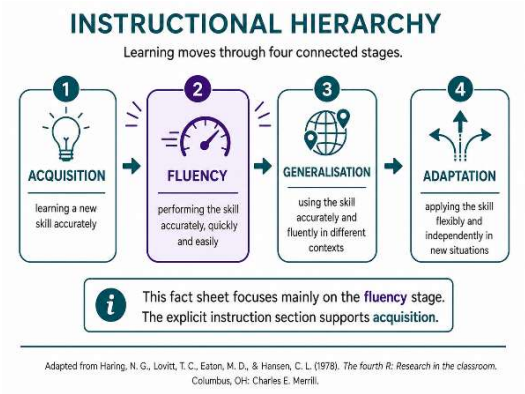
Why does it matter?

- Early arithmetic skills are strong predictors of later mathematics achievement throughout primary school and beyond. Persistent difficulties with basic addition and subtraction are a hallmark of students with long-term mathematics challenges.
- Explicit teaching of part-part-whole relationships and place-value understanding supports arithmetic development.
- Students benefit from moving beyond counting-by-ones towards more efficient strategies and automatic recall of basic number facts, which is why fluency-based computation tasks are widely used for screening and progress monitoring for both early numeracy and later mathematics.
- Arithmetic understanding supports development of more complex mathematics skills, including word problems, advanced calculations and algebra.

Goal of instruction

The goal of instruction is to move students from early counting strategies towards accurate, efficient and increasingly automatic addition and subtraction strategies. Students should develop strong number understanding, part-part-whole knowledge, place-value understanding, and a growing bank of known facts that can be used flexibly.

Students need to build both **accuracy and fluency** with number combinations so that they are able to **generalise** this knowledge to solving problems effectively. This advice focuses on the acquisition and fluency stages of learning, with a heavier focus on fluency because acquisition instruction is often well covered in core curriculum teaching. The explicit instruction section supports acquisition; the review and practice section focuses mainly on fluency once students are accurate.

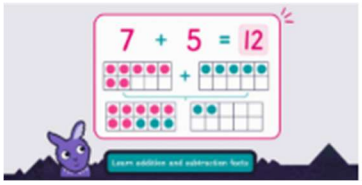


Building accuracy (the acquisition stage)

At the acquisition stage, students are learning how and when to execute strategies accurately.

Effective addition and subtraction instruction at the acquisition stage:

- Relies on secure counting procedures and principles
- Requires skill in recognising and writing numbers and mathematical symbols (numerals, +, −, =)
- Involves explicitly teaching number relationships and efficient strategies
- Teaches strategies beginning with concrete materials or representations, e.g. teaching addition by counting using blocks or lines
- Involves high levels of teacher modelling and feedback after each trial
- Cover-Copy-Compare can be used after a fact or strategy has been introduced, when students still need a correct model, accurate rehearsal, self-checking, and immediate correction.



Explicit instruction

Explicit instruction involving deliberate teacher modelling, and the gradual release of responsibility to students is an excellent teaching strategy for the acquisition stage. Check the "Explicit Instruction Routine Examples" for examples of how these can be presented to maximise both support for and the active involvement of students.

Teachers **explicitly model** addition and subtraction strategies using a **Teacher Modelling / Guided Practice / Supporting Independent Practice** approach. Instruction should include modelling efficient strategies such as counting-on, doubles, near doubles, part-part-whole reasoning, making tens, and using tens and ones to solve problems mentally.

Concrete and visual materials such as counters, ten-frames, number tracks, number paths, hundreds charts, and Base-10 materials should be used to develop conceptual understanding of the process of addition and subtraction before gradually reducing reliance on materials as students develop fluency and automaticity.

Guided practice should include multiple **opportunities to respond**, **immediate feedback**, and regular **checks for understanding** to ensure students are using efficient strategies rather than relying primarily on counting-by-ones.

Independent practice and **review** activities should provide repeated practice solving addition, subtraction, and mental computation tasks across increasing number ranges.

Students move repeatedly between acquisition and fluency as new fact sets and strategies are introduced. A fact set should not be practised for speed until students can solve it accurately. If students are fast but inaccurate, return to explicit modelling, guided practice, immediate feedback and a smaller fact set.

Building fluency (the proficiency stage)

Once students can perform a skill accurately and independently, they need opportunities to build fluency. Instruction should progressively support students to retrieve a growing bank of number facts automatically, because many flexible strategies depend on facts students already know.

Effective addition and subtraction instruction at the fluency stage includes:

- Frequent practice with small, taught fact sets
- Many opportunities to respond, e.g. choral responses, whiteboard work, practice pages
- Timed practice, attempting personal best scores rather than comparison with peers

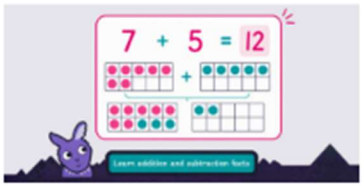
Students move repeatedly through acquisition and fluency/proficiency stages with larger numbers and increasingly complex calculations. Gradually increase difficulty through:

- addition and subtraction within 10
- bridging through 10
- two-digit calculations
- problems requiring place-value understanding

Effective approaches to build fluency work with small sets of facts practised to mastery, with many opportunities to respond. If fluency in arithmetic facts is an area of need at the class level, structured practice programs may be considered such as:

- MIND: Facts on Fire by Dr Brian Poncy and Dr Gary Duhon (free – see Resources for link)
- Numbots by MathsCircle (subscription)

Effective instruction supports students to move beyond counting-by-ones towards more efficient mental strategies and increasing fluency.



Vocabulary and stem sentences

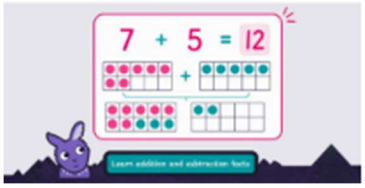
Vocabulary and stem sentences

Vocabulary	Simple Definition	Questions / Stem Sentences
add	To put amounts together to find the sum or increase a set *	___ add ___ is equal to ___. ___ is equal to ___ add ___.
subtract	To compare two sets or to separate a set *	What happens when we take some away?
Equals sign	The symbol that tells you that two sides of an equation are the same, balanced, or equal.*	___ is equal to ___
total	The whole amount after adding	What is the total?
together	To combine sets or numbers*	How many altogether?
difference	The result of subtracting one number from another number	What is the difference between ___ and ___?

** With thanks to Texas Education Agency (Instructional Routines for Mathematics Intervention)*

Common strategies for addition and subtraction, from least to most efficient

Counting-based strategies	
Count all	Students count both addends separately, then count the total from one
Count on	Start at one addend and count up the other addend for addition OR
Count back	Start at the whole and count back the amount being subtracted. For example, for 9 − 6, count back 6 steps from 9: 8, 7, 6, 5, 4, 3.
Count up	Count up for subtraction to find the difference between the whole and one part, e.g. for 9-6: 6… 7, 8, 9.
Decomposition and derived fact strategies	
Near double	Using a known doubles fact to figure out a related fact, e.g. I know 6+6 = 12 so 6+7 = 13
Make ten	The make-10 strategy is a mental maths strategy where students break apart one addend to build the first to 10, then add the remaining amount, e.g. 7 + 6 = 7 + (3 + 3) = 10 + 3 = 13
Fact family	Related addition and subtraction facts using the same numbers, e.g: 7 + 3 = 10, 3 + 7 = 10, 10 − 3 = 7, 10 − 7 = 3.
Retrieval	
Retrieval	When students recall the answer from memory without active strategy use. Low doubles are typically the first facts students are able to retrieve (e.g. 1+1, 2+2, 3+3). Retrieval is a desirable goal as not only does it release cognitive resources for problem solving, but it enables the development of more flexible derived fact strategies using the known facts.



INSTRUCTIONAL GUIDANCE: ADDITION & SUBTRACTION

Explicit instruction routines

Learning intention

We are learning to use number relationships to solve and recall addition and subtraction facts.

Success criteria

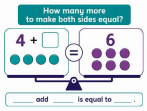
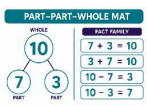
- I can use materials or representations to show an addition or subtraction problem.
- I can explain how the parts and whole are related.
- I can use efficient strategies, such as counting on, making ten, doubles, near doubles, and fact families.
- I can say or write a matching number sentence.
- When I am accurate, I can practise facts so I can recall them more fluently.

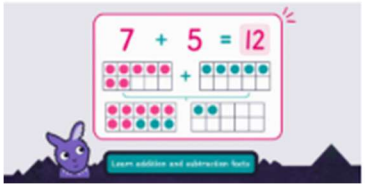
Using these routines

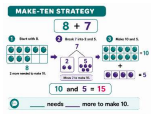
This guidance is linked to the Year 1 Number Facts Addition and Year 1 Number Facts Subtraction subtests, so it will not be flagged as a classwide recommendation for Foundation students.

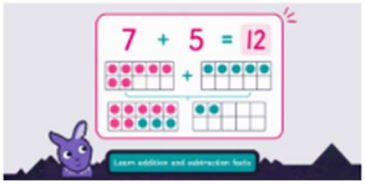
The number operations task for Foundation is Decomposition. Foundation teachers should use the Decomposition guidance as the main recommendation for early number operations, but may also find this addition and subtraction guidance useful for extending students who are ready.

Explicit Instruction Guidance

Explicit Instruction Guidance Context and Presentation	Teacher Modelling	Guided Practice / Correction Routine	Supported Independent Practice
Understanding the equals sign and missing parts Display equal and unequal sets using counters, marks, ten-frames, or simple drawings. Then present a missing-part problem, such as 4 + __ = 6. 	"Equal means both sides have the same value." Show two equal sets, such as 3 and 3. "Both sides have 3, so they are equal. I can write the equals sign." Then show 4 + __ = 6 with marks or counters. "The equals sign tells me both sides must have the same value. This side has 4. This side needs to equal 6. I need 2 more. So, 4 add 2 is equal to 6."	Display 3 + __ = 5 with counters or marks. Ask: "Are the two sides equal yet? How many more do we need to make 5?" Students add the missing part and say: "3 add 2 is equal to 5." Correction: If students place the equals sign between unequal sets, return to comparing both sides: "This side has ___. This side has ___. Are they the same value?" If students give the wrong missing part, count on or build the missing amount: "We have 3. Count on to 5: 4, 5. We added 2."	Students complete similar missing-part problems using counters, marks, ten-frames, or mini-whiteboards. Prompt: "Are the sides equal yet?" "How many more are needed?" "What number goes in the box?" "Can you write the number sentence?" Fade from concrete sets to drawings, then to numeral-only equations when students are accurate.
Adding 1 by counting on Display facts such as **6 + 1 = __** with a number track, number path, fingers, or ten-frame available.	"When we add 1, we say the next number in the counting sequence." Display 6 + 1. "I start with 6. I add one more. The next number after 6 is 7. So, 6 add 1 is equal to 7." Show this on a number track or by adding one counter.	Display 8 + 1 = __. Ask: "What number do we start with? What is the next number?" Students respond: "The next number after 8 is 9. 8 add 1 is equal to 9." Correction: If students give the wrong next number, check on the number track: "Here is 8. The next number after 8 is 9. So, 8 add 1 is equal to 9."	Students practise +1 facts within the taught range using number tracks, fingers, mini-whiteboards, or numeral-only cards. Prompt: "What number do you start with?" "What is the next number?" "Say the whole number sentence." Once accurate, use brief daily review to build fluent recall of +1 facts.
Connecting part-whole relationships to addition and subtraction facts 	"The whole is 4. The parts are 3 and 1." Show the partner card or representation. "3 and 1 make 4. This matches the number sentence 3 plus 1 is equal to 4." Rotate or reverse the parts. "1 plus 3 is also equal to 4." Cover one part. "If I start with 4 and take away 3, there	Show the same part-whole representation. Ask: "What are the parts? What is the whole? What addition sentence matches? What subtraction sentence matches?" Students say the matching facts. Correction: If students confuse addition and subtraction, clarify the	Students match partner cards, finger representations, or dot patterns to addition and subtraction fact cards. Students read the matching number sentences to a partner: "___ plus ___ is equal to ___." "___ take away ___ is equal to ___." Fade from



Use partner cards, dot patterns, fingers, counters, or part-part-whole mats to show related facts, such as **3 + 1 = 4**, **1 + 3 = 4**, **4 – 3 = 1**, and **4 – 1 = 3**.	is 1 left. 4 take away 3 is equal to 1."	action: "Addition puts parts together. Subtraction starts with the whole and takes a part away." If students mismatch a number and a quantity, point to the dots and the numerals at the same time.	visible parts to covered or missing parts, then to number sentences.
Make-ten for addition within 20  Display facts such as 8 + 7 or 9 + 6 using two ten-frames and counters.	"When one number is close to 10, we can break apart the other number to make 10 first." Display 8 + 7. "8 needs 2 more to make 10. I can break 7 into 2 and 5. I move 2 to make 10. There are 5 left. 10 and 5 is 15. So, 8 add 7 is equal to 15."	Display 9 + 6. Ask: "How many more does 9 need to make 10? How can we break 6? What is 10 and the rest?" Students respond: "9 needs 1 more. 6 breaks into 1 and 5. 10 and 5 is 15." Correction: If students break apart the second addend incorrectly, return to the ten-frame: "The frame has ___ empty space/s, so we need ___ to make 10. Now break the other number into ___ and ___."	Students solve make-ten facts using ten-frames with counters, then ten-frame drawings, then numeral-only equations. Prompt: "How many more to make 10?" "How will you break apart the other number?" "What is 10 and the rest?" Once accurate, include a small set of make-ten facts in brief review routines.
Using efficient strategies beyond counting-by-ones Display facts suited to a taught strategy, such as doubles, near doubles, count-on, count-back, count-up for difference, or tens-and-ones reasoning.	"I want to solve this efficiently. I will think about a fact or relationship I already know." Example: 6 + 7. "I know 6 + 6 = 12. 7 is one more than 6, so 6 + 7 is one more than 12. That is 13." Example: 9 – 6. "I can count up from 6 to 9 to find the difference: 7, 8, 9. That is 3 counts, so 9 take away 6 is 3."	Display a similar fact. Ask: "What do you already know that could help? Is this a double, near double, make-ten, count-on, or count-up problem?" Students explain the strategy before giving the answer. Correction: If students revert to inefficient counting-by-ones when a taught strategy is available, model the efficient relationship again and have students repeat the strategy sentence.	Students sort or solve facts by strategy type, then explain one or two examples orally or on mini-whiteboards. Prompt: "What strategy did you use?" "What known fact helped?" "Can you say the whole number sentence?" As students become accurate, move from strategy explanation to brief fluency practice and cumulative review.
Cover-Copy-Compare for accurate rehearsal of taught facts Use after students have been explicitly taught a small fact set or strategy, but still need support to respond accurately. Display a small set of correctly completed facts, such as +1 facts or a related fact family.	"First I read the number fact: 7 add 1 is equal to 8." "Now I cover it. I will write it from memory: 7 add 1 is equal to 8." "Now I compare my answer with the model. It matches, so I keep going." If modelling an error: "My answer does not match. I correct it straight away by copying the correct fact and reading it again."	Students complete one fact at a time: look, cover, write, compare, correct. Ask: "Did your fact match the model?" "If it did not match, what do you need to correct?" Correction: If students repeatedly copy inaccurately or cannot recall the fact after covering, reduce the fact set and return to the representation or strategy. "Let's show this fact again first. 7 add 1 means the next number after 7. The next number is 8."	Students practise a small set of already-taught facts using Cover-Copy-Compare. They check each response against the model and correct errors immediately. Use this routine to build accurate responding before moving the same fact set into faster fluency practice such as choral response, audio-paced practice, or explicit timing.



INSTRUCTIONAL GUIDANCE: ADDITION & SUBTRACTION

Review and Practice

Daily review should be brief: about 5–10 minutes. Use active participation strategies so all students respond, every time.

Arithmetic review should focus on a **small set of already-taught facts** that students can solve accurately but not yet fluently. Students should not practise unfamiliar facts for speed. If students are fast but inaccurate, pause the fluency routine and return to explicit modelling, guided practice, immediate feedback, and a smaller fact set.

Teachers should use professional judgement when deciding when a fact set has been mastered and is ready to be practised less often. Some fact sets may need one or two days of focused review; others may require several days.

Core review routines for arithmetic facts

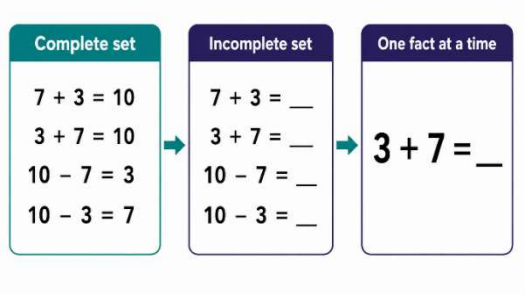
Use these routines after students have been explicitly taught the relevant strategy or fact set. The goal is to move from accurate strategy use towards fluent and increasingly automatic recall.

Check the Addition and Subtraction: Resources for a slide bank that can be used to support these review and practice routines.

Related Fact Set Review

Purpose

Students practise reading, completing, remembering, and recalling a small set of related addition and subtraction facts.



Use for

Whole-class daily review of a small, already-taught fact set, such as +1 facts, doubles, make-ten facts, or a fact family.

Materials

Displayed number facts, mini-whiteboards or response cards if needed.

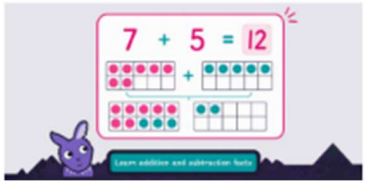
Teacher note

Use full number sentences during choral response so students rehearse the relationship, not just the answer. For example, students say, “Three add seven equals ten,” rather than only saying “ten.”

Step	Teacher move	Student response
1. Show a small set of related facts	Display a small collection of related number facts, such as: 7 + 3 = 10; 3 + 7 = 10; 10 − 7 = 3; 10 − 3 = 7.	Students look and prepare to read.
2. Read the facts together	“Read these with me.”	“Seven add three equals ten. Three add seven equals ten. Ten subtract seven equals three. Ten subtract three equals seven.”
3. Read and complete incomplete facts	Remove the answers: 7 + 3 = __; 3 + 7 = __; 10 − 7 = __; 10 − 3 = __. “Read and complete these with me.”	Students read each full number sentence with the missing answer included.
4. Remember and recite the facts	Remove the display or cover the answers. “Now say them from memory.”	Students recite the full facts from memory.
5. Practise the facts out of order	Display one fact at a time. Provide wait time using a clear response signal, such as an outstretched hand. “Get ready. Wait for my signal.”	Students respond chorally with the full number sentence, such as “Three add seven equals ten.”
6. Intersperse previously mastered facts	Repeat step 5, mixing today’s focus facts with facts practised in previous sets.	Students respond to a mix of current and previously mastered facts.

Correction routine

If many students are inaccurate, stop the fast review. Return to the representation or strategy: “Let’s show the parts and whole again.” “What fact do we know that helps?” “Now say the full number sentence with me.”



Explicit Timing: Personal Best

Purpose

Students build fluency with a small set of facts they can already solve accurately.

Use for

Facts that have been explicitly taught and practised to accuracy, but are not yet fluent.

Materials

Short practice sheet, mini-whiteboard set, or digital fact display using only the taught fact set.

Teacher note

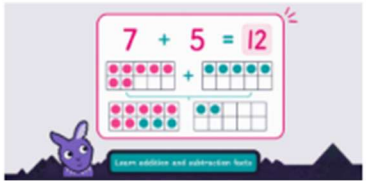
Explicit timing should be personal-best focused, not competitive. Keep goals private. Use 30–60 seconds. If students are inaccurate, stop timing and return to modelling, feedback, and a smaller fact set.

Brief example routine: +1 facts within 10

- Give students a short practice sheet containing only taught +1 facts, such as 3 + 1, 7 + 1, 5 + 1, and 9 + 1.
- Say: “You will have 30 seconds. Work carefully and accurately. Try to beat your own last score.”
- Students complete as many facts as they can in 30 seconds.
- Say: “Stop. Put your pencil down. Check your answers.”
- Students count the number correct and record it privately.
- Review one or two missed facts: “When we add 1, we say the next number. 7 + 1 = 8.”
- Later in the week, students repeat the same or a slightly expanded fact set and try to improve their own score.

Correction routine

If students are answering quickly but making errors, say: “We are not ready to practise this set for speed yet. Let’s go back to solving carefully and accurately.”



Audio-Paced Practice

Purpose

Students practise retrieving known facts efficiently, with immediate checking and correction.

Use for

Small, already-taught fact sets that students can solve accurately but need to retrieve more efficiently.

Materials

Teacher voice, recording, slideshow, or audio file.

Teacher note

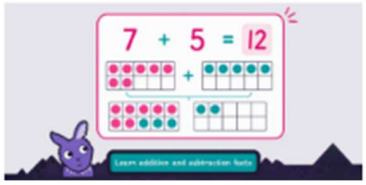
The pace should be brisk but not stressful. Students should have enough time to respond before the answer is given. Use only facts students have already been taught.

Example routine: audio-paced +1 facts

Teacher/audio prompt	Student response
“3 add 1…” pause	Students say or write “4.”
“4.”	Students check and correct if needed.
“7 add 1…” pause	Students say or write “8.”
“8.”	Students check and correct if needed.
“5 add 1…” pause	Students say or write “6.”
“6.”	Students check and correct if needed.

Correction routine

If students cannot respond before the answer is given, slow the pace, reduce the fact set, or return to explicit modelling of the strategy.



Goal Setting

Purpose

Students build motivation and attention during fluency practice by working towards a clear, achievable personal goal.

Use for

Students who are practising a small set of facts they can already solve accurately.

Teacher note

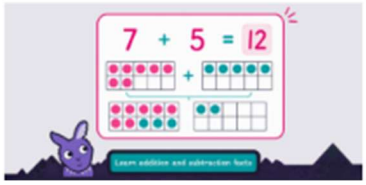
Goals should be private and personal-best focused, not competitive. The aim is to increase correct responses over time while maintaining accuracy.

Example

A student records, “Yesterday I answered 12 facts correctly. Today my goal is 14.”

Correction routine

If a student increases speed but loses accuracy, reset the goal around accuracy: “Today your goal is to answer carefully and get all of the practised facts correct.”

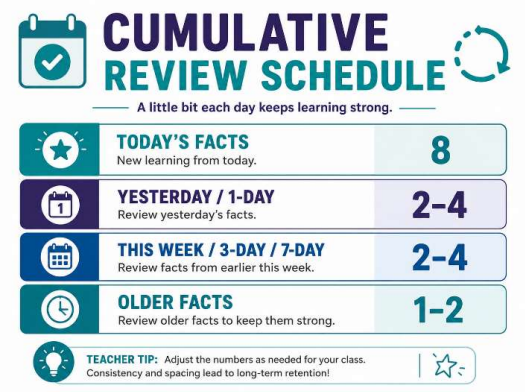


Cumulative Review

As facts are mastered, they should continue to be reviewed with reduced frequency. Cumulative review helps students retain facts over time while allowing the teacher to focus most practice on the current fact set.

For example, in a set of 20 review facts, the teacher might include:

Review type	Number of facts
Today's facts	8 facts, such as 4 facts repeated twice
1-day review	2 facts
3-day review	2 facts
7-day review	2 facts
14-day review	2 facts
30-day review	2 facts
60-day review	1 fact
120-day review	1 fact



A simpler classroom version is:

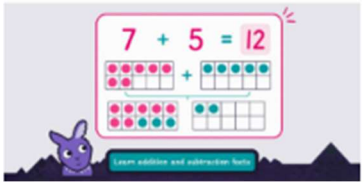
Review type	Number of facts
Today's facts	8 facts, such as 4 facts repeated twice
Yesterday's facts	4 facts
This week's facts	4 facts
This month's facts	2 facts
Older facts	2 facts

Teacher note

Cumulative review should remain accurate and efficient. If older facts are no longer accurate, return them briefly to explicit modelling or supported practice before including them again in fluency review.

Moving review forward

When students are accurate and fluent with a small fact set, reduce the frequency of practice for that set and introduce a new related fact set. Continue to include previously mastered facts in cumulative review so students maintain accuracy, fluency, and retrieval over time.



INSTRUCTIONAL GUIDANCE: ADDITION & SUBTRACTION

Implementation Summary

- The goal is developing efficient and increasingly fluent addition and subtraction strategies.
- Students need to be able to explain how they solved addition and subtraction problems.
- Previous work on part-part-whole relationships and early place value understanding supports them to do this.
- Progress gradually from smaller, highly familiar number facts to larger calculations and two-digit problems requiring place-value understanding.
- Support students to move beyond counting-by-ones towards efficient mental strategies. As they develop their skills, students will be more likely to use flexible decomposition strategies if they can retrieve a bank of facts from memory.
- Use frequent, daily arithmetic practice sessions initially before moving to less frequent cumulative review.