Maths and Me: Junior Infants – Short-Term Plan, Unit 8: Numbers 6 to 8 (January: Weeks 1&2)

Strand(s) > Strand Unit(s)	Number > Uses of Number; Numeration and Counting; Sets and Operations. Algebra > Patterns, Rules and Relationships.
Learning Outcome(s)	Through appropriately playful and engaging learning experiences children should be able to develop an awareness that numbers have a variety of uses; develop an awareness that the purpose of counting is to quantify; use a range of counting strategies for a range of purposes; recognise and understand what happens when quantities (sets) are partitioned and combined.

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	**Counting 1 to 8:** Recites forward to at least 10 (U&C); Recognises numbers, initially within 10 (U&C); Demonstrates an awareness of and uses numerals in personally meaningful contexts (C); Attends to numerals of significance or importance to the child (U&C); Uses appropriate strategies to find out how many (A&PS)		D Reason & Respond L1, 3–9 C Counting Objects L1 C Number Table L1 P Story: 'Snow White' L1 C Sound of a Number L2 C Making Sets (0–8) L2 P Story: *How to Catch a Rainbow* L2 C Making Sets and Matching Numerals (0–8) L3 P Game: Number Bingo L3 P Story: *Suzie the Eight-Legged Painter* L3 D Quick Images L4 C Consolidation of Number L4 C Composition of Number (1–8) L5–6 C Making Equivalent and Non-equivalent Sets L7 C Ordering Numerals and Sets L8 D Jay's Soccer Practice L8 P Story: *Six-Dinner Sid* L8 D Number Formation – 0 to 8 L9 C Making Numerals L9 **Print resources** Pupil's Book pages 43–48 Home/School Links Book pages 21–22 PCMs 34–36	**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 16–17
2	**Making Sets – 0 to 8:** Demonstrates an awareness of number and number word sequencing through song, stories, rhymes and games (C); Participates in activities that involve communicating about number (U&C); Uses ideas about number and quantity to communicate with others (C); Explores how numbers are used for counting and that the last number in the count indicates the quantity of objects in a set (U&C)			
3	**Matching Numerals to Sets – 0 to 8:** Recognises that objects and symbols can represent numbers (U&C); Matches numerals and number words to sets and to other numerals in a variety of contexts (A&PS); Selects and uses appropriate materials to make a variety of sets for a given number (A&PS); Sorts, groups and arranges materials according to criteria (R); Establishes that zero, as a numeral, represents nothing/none in terms of quantity (R)			
4	**Consolidation of Number – 0 to 8:** Explores how the layout of or size of elements in a set has no effect on the overall total (conservation of number) (U&C); Subitises (looks at a group of objects and realises how many there are, without counting) number of objects in a set (U&C)			
5	**Composition of Number – 1 to 8:** Investigates various arrangements of manipulatives to prompt different mental images of numbers up to 8, while developing a sense of each number (R)			
6	**Extending Composition of Number – 1 to 8:** Investigates various arrangements of manipulatives to prompt different mental images of numbers up to 10, while developing a sense of each number (R)			
7	**Equivalent and Non-equivalent Sets – 0 to 8:** Shows an understanding of differences in value (U&C); Uses comparative language (more, less, same) to compare sets to at least 10 (C); Uses appropriate gestures and words to convey and make comparisons (C); Identifies, recognises and estimates more or less in the real-life context and/or play (R)			
8	**Ordering Numerals and Sets – 1 to 8:** Orders numerals up to at least 10 (U&C); Orders sets without counting and checks by counting (R); Explains ordinality using the language of after, before and in-between (C)			
9	**Writing Numbers 0 to 8:** Makes numerals creatively (C); Discusses, draws and writes representations of numbers 1–8, using manipulatives (C); Explores the use of number and plays games to raise awareness of number in their environment (A&PS); Notices and recognises the use of numerals as labels in the context of home, the classroom and the school environment (U&C)			
10	**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 'Junior Infants *Maths and Me* Progression Continua Overview' for a detailed breakdown of how all progression continua are covered.
Maths Language	See 'Junior Infants *Maths and Me* Maths Language Overview', individual lesson plans and Unit 8 Maths Language Cards.
Equipment	See 'Junior Infants *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 below.) • See Unit 8 Let's Strengthen PCM. • See Unit 8 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- Over the course of the fortnight, the children will be counting from 1 to 10, but the focus will be on the numbers 6 to 8. You will be assessing whether they know the sequence in which to count, are using one-to-one correspondence (assigning a number name to each object, 0–8), know that the last number is the total count, and understand conservation of number.
- The children are introduced to the abstract principle of counting (e.g. counting sounds), which leads to them being able to create a mental image of a number and more easily 'count on' in their head.
- It is of key importance that children see numbers in the 'real world' and that they apply their growing knowledge to experiences outside the classroom. They will listen to stories about number to extend their experience.
- The children will begin to recognise and identify the new numerals, and write the numerals 1 to 8 'creatively' and on paper, as they consolidate their experience of matching the numeral to the correct number of objects or sounds.
- Composition of number allows the children to 'break up' a number of objects (1–8) and explore the different combinations they can make. Seeing smaller numbers within the bigger number solidifies comprehension of the number itself, and what it is 'made of'. Partitioning and combining becomes a natural progression when the children have already 'deconstructed' a number of objects.

The theme of this unit is **Picture Books About Number**. Suggestions for relevant books are included in the lesson plans.

Common misconceptions and difficulties

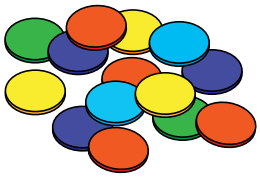
- The children may count too many or too few objects.
- The children may count the same object more than once.
- The children may repeat a number while counting objects or miss a number.
- The children may not realise, when using the ten frame, that the counters can be in varying places in the frame, but can still be successfully counted.
- The children may become confused with words that have the same sound, but different meanings (e.g. *ate* and *eight*).
- The children may mix up letter symbols and number symbols (e.g. 5 and S, or 8 and B).

- The children may struggle with new vocabulary, such as: *lot*, *some*, *one more*, *one less*. (It is very helpful to make up small stories for this age group, e.g. 'There were six dwarfs out for a walk, but then one more joined them. How many were there then?')
- The children may struggle with making the link between the numeral, the number word and the objects (concrete and pictorial). (Engaging in multiple hands-on activities will reinforce this concept.)

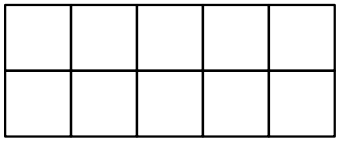
The Unit 8 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

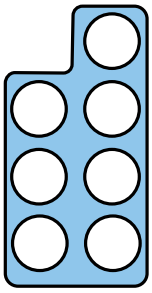
- Number shapes
- Five frames
- Ten frames
- Ordering frames
- Cuisenaire rods
- Sorting circles and/or dividers
- Two-sided counters



Counters



Ten frame



Number shape

Teaching tip

Number Shapes, Five Frames, Ten Frames and Sorting Circle 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

Counting 1 to 8

Focus of learning (with Elements)

- Recites forward to at least 10 (U&C)
- Recognises numbers, initially within 10 (U&C)
- Demonstrates an awareness of and uses numerals in personally meaningful contexts (C)
- Attends to numerals of significance or importance to the child (U&C)
- Uses appropriate strategies to find out how many (A&PS)

Learning experiences

- D Digital activity: Count with Monty
  MAM Routine: Reason & Respond
- C Concrete activity: Counting Objects (1–8)
- C Concrete activity: Number Table
- P Story: 'Snow White and the Seven Dwarfs'
- P Pupil's Book page 43: Counting 1 to 8

Equipment

- Manipulatives (bears, counters, beads, links, interlocking cubes, 2-D and 3-D shapes) and collections of small objects from nature walks (leaves, twigs, pine cones, etc.)
- Story: 'Snow White and the Seven Dwarfs'
- Paint or play dough
- Monty the puppet

Maths language

- six, seven, eight, in-between, next

Warm-up

D Digital activity: Count with Monty
MAM Routine: Reason & Respond

Use Monty the puppet alongside the digital counting activity. Tell the children to count with Monty and help him name the numbers. Assess the following:

- Are they counting in sequence (not missing any number)?
- Are they counting each number (once not twice)?
- Can they start at a number (e.g. 4) and count on?
- Can they stop at a designated number (e.g. count to 7)?
- Can they recognise each number and its position?

They are also answering questions such as:

- Is anyone in the class five years old? Where is that number on the stepping stones? (in-between 4 and 6, after 4, before 6)
- Is anyone four/six years old? Where is that number? (in-between ... and ..., after ..., before ...)
- What age will you be on your *next* birthday?
- Does anyone have a sister/brother who is seven/eight years old?
- Does anyone know the number of their house?
- Is anyone's house number between 1 and 10?
- What number comes *after* 6?
- What number comes *before* 8?
- What number comes *in-between* 6 and 8?

Teaching tip

You could play this activity every day over the course of this unit.

Main event

C Concrete activity: Counting Objects (1–8)

This activity provides an opportunity to assess each child's understanding of counting objects, as well as the strategies they are using. The children are not assigning a total number in this activity, rather they are focusing on the count and the introduction of the numbers 6, 7 and 8. Distribute manipulatives to each child, and tell them to do the following:

- Count a set of 1, 2, 3, 4, 5 objects (revision).
- Count a set of 6, 7 and 8 objects.

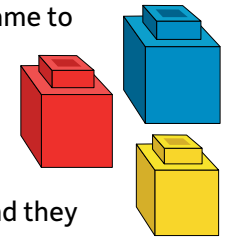
Teaching tip

Ensure that each child is counting correctly (e.g. they may be counting in their head, but missing an object or missing a number in the sequence). At this early stage of counting, most children will be counting aloud, pushing objects away from the group of objects and assigning a number as they push/touch.

Assess the following:

Assessment Opportunity

- Are the children repeating one number or missing a number in the sequence?
- Are they subitising smaller numbers of objects, e.g. four. What is their strategy? Ask: *How do you know there are four objects?* (Do they see two and two?)
- Are they touching each object *once* or are they counting one object twice?
- Are they assigning a number name to each object as they touch it?
- Do they understand that the objects can be moved apart slightly or counted, e.g. top to bottom (in a stack of cubes), and they will still get the same number?



- Are they counting in the correct sequence, including the numbers 6, 7, 8?
- Do they understand that the *final* number is the *total* of all of the objects?
- Can they count objects that are in an irregular arrangement (e.g. by putting two objects and three objects together, and counting the total / putting one object, three objects and two objects together, and counting the total)? They are not *adding*, but assembling and counting a random group of objects.

Let's strengthen

Place eight objects on the table. Tell the children to count them. Move three away and ask:

- How many are left?

After they have counted five, place the three missing objects back on the table again, and ask:

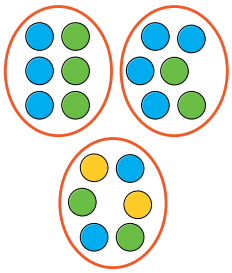
- How many are there now?

Do the children need to recount?

Let's deepen

Ask the children to give you, for example, four cubes from a set of six cubes. Do they need to recount the amount when asked how many cubes they have given you? Do they know how many cubes are left (after giving you four)? Do they need to count or can they subitise? When the four missing cubes are returned to the set, do the children know that there are still six cubes?

C Concrete activity: Number Table



You could set up a Number Table for the three 'new numbers' over the coming fortnight. The number 6 could feature for a few days, followed by the number 7, and then the number 8. Both the numeral and the word could be shown (e.g. 6 and *six*). Sets of six objects (e.g. counters) could be shown in various arrays. You could also show the number on paper, and using concrete materials, items from the nature table and items chosen by the children. They could help you to set up the table, or one group could be assigned to set it up.

P Story: 'Snow White and the Seven Dwarfs'

Read the story 'Snow White and the Seven Dwarfs'. The children draw, paint or make (with play dough) the seven dwarfs.

P Pupil's Book page 43: Counting 1 to 8

Optional consolidation and extension possibilities

Role Play If you have a shop set up in the Play Area, in groups, the children could role-play shopkeepers as they count out small items for their customers and put them in a bag. The customers recount the items, to make sure that they got the amount they asked for.

Story Read 'The Wolf and the Seven Little Kids', and then act out the events from the story in the PE hall. There could be a few groups with a wolf and seven kids. A recording of this story is also available at: edco.ie/kur5

Maths Eyes What numbers can the children see inside/outside the classroom? If it is someone's birthday, ask them to bring in one of their birthday cards with their age on it. Draw attention to counting opportunities, by counting out seven copies, etc.

Count 'irregular groups' (e.g. six children standing in random formation).

Song This counting song has a catchy tune for the children to sing along to: edco.ie/npzc

Day 2, Lesson 2

Making Sets – 0 to 8

Focus of learning (with Elements)

- Demonstrates an awareness of number and number word sequencing through song, stories, rhymes and games (C)
- Participates in activities that involve communicating about number (U&C)
- Uses ideas about number and quantity to communicate with others (C)
- Explores how numbers are used for counting and that the last number in the count indicates the quantity of objects in a set (U&C)

Learning experiences

- C Concrete activity: Sound of a Number
- C Concrete activity: Making Sets (0–8)
- P Story: *How to Catch a Rainbow* by Naomi Jones

Equipment

- Cubes or buttons
- Tin or jar
- Manipulatives (bears, counters, beads, links, interlocking cubes, 2-D and 3-D shapes) and collections of small objects from nature walks (leaves, twigs, pine cones, etc.)
- Story: *How to Catch a Rainbow* by Naomi Jones
- Crayons in the seven colours of the rainbow
- Monty the puppet

Maths language

- There is no new maths language for this lesson.

Warm-up

C Concrete activity: Sound of a Number

Observe the children's understanding of the abstraction principle (e.g. counting sounds). Ask them to count along with Monty as he drops five cubes or buttons, one by one, into a tin or jar. Repeat, but this time, ask the children to count on their own. Repeat again, but this time, stop at various numbers and ask the children how many they have counted. Repeat the entire sequence, but with different sounds, such as clapping, tapping or clicking. You could ask individual children to make the sound while the others count. You could also hold up a number and tell the children to choose a sound and make that sound as they count.

Tell the children to close their eyes and count with Monty, and then on their own. Stop at various numbers and ask how many sounds they have heard.

The children then count in their head. Ask individual children how many sounds have they heard.

Let's deepen

Number tennis: You say, 'one', the children say, 'two'. You say, 'three', they say 'four'. Continue up to ten.

Make a pattern: You say, 'one, two', the children say, 'three four'. Continue up to ten.

Start at a number: You say, 'five', the children say, 'six'. Continue up to ten.

Pair work: Ask:

- Can you tap a pattern/rhythm (e.g. 1, 2; 1, 2)?
- Can your partner copy your tapping?
- Can you share it with the class?

Main event

C Concrete activity: Making Sets (0–8)

This is an opportunity to assess each child's understanding of the cardinal principle (assigning a 'special number' or 'total number' to a set of objects).

Distribute manipulatives to each child. Say/ask:

- Make a set with your objects.
- How many objects are there in your set? How do you know? (Do the children know that the last number they say when counting is the total quantity?)
- Can you show and tell the class how you found out how many objects are in your set?
- Can everyone make a set of six? How did you make a set of six? How do you know that there are six objects in your set?
- Can everyone make a set of four? Can you turn it into a set of five? (Do any children add another object to their set of four or do they make a new set of five?)
- Who can make a set of seven? Count the objects in your set. Put your objects in a line (horizontally and then vertically). How many are there?
- Can you turn your set of seven into a set of six? How will you do that? Do you need to count your objects again?
- Can you make a set of seven again? How will you do that?
- Can you make a set of zero objects? No!

Let's strengthen

Choose a number (from your class-sized numbers or from the numeral posters) and draw the correct number of objects on your MWBs for that number. What number did you choose?

Let's deepen

Tap on the table. How many taps did you do? Make a set that has this number of objects.

P Story: *How to Catch a Rainbow* by Naomi Jones

Read *How to Catch a Rainbow* by Naomi Jones, in which Freya does her best to find the seven colours of the rainbow. The children could draw the seven colours of the 'perfect' rainbow that Freya finally finds, using crayons. You could integrate this activity with Literacy and Visual Arts.

Teaching tip

A reading of this story is available at: edco.ie/56tg

Optional consolidation and extension possibilities

Games Bank Play 'Hopscotch'.

Maths Eyes Say/ask:

- Look around/outside the classroom.
- Who can see a set of ... (e.g. 4)?
- Are you correct? (The child moves to count the set if it is inside the classroom.)
- Can anyone see a set with one more object?
- Can anyone see a set of 8?
- Let's find out if you were correct.

Day 3, Lesson 3

Matching Numerals to Sets – 0 to 8

Focus of learning (with Elements)

- Recognises that objects and symbols can represent numbers (U&C)
- Matches numerals and number words to sets and to other numerals in a variety of contexts (A&PS)
- Selects and uses appropriate materials to make a variety of sets for a given number (A&PS)
- Sorts, groups and arranges materials according to criteria (R)
- Establishes that zero, as a numeral, represents nothing/none in terms of quantity (R)

Learning experiences

- (D) Animation: Monty Needs Help! *MAM* Routine: Reason & Respond
- (C) Concrete activity: Making Sets and Matching Numerals (0–8)
- (P) Game: Number Bingo
- (P) Story: *Suzie the Eight-Legged Painter* by Bethany Gum

Equipment

- Manipulatives (bears, counters, beads, links, interlocking cubes, 2-D and 3-D shapes) and collections of small objects from nature walks (leaves, twigs, pine cones, etc.)
- Sticky notes
- Story: *Suzie the Eight-Legged Painter* by Bethany Gum
- Play dough
- Egg cartons
- Pipe cleaners
- PCMs 34, 35
- Monty the puppet

Maths language

- There is no new maths language for this lesson.

Warm-up

(D) Animation: Monty Needs Help!

MAM Routine: Reason & Respond

Use Monty the puppet alongside the animation. Play the animation, in which Monty is having trouble counting his bones, treats and toys, and the children must help him. When they have helped Monty to count a set correctly, the children help him to assign the correct number.

Main event

(C) Concrete activity: Making Sets and Matching Numerals (0–8)

Distribute manipulatives and a copy of PCM 34: Numerals 0–8 (Small) to each child. This activity provides an opportunity to assess each child's understanding of Number (0–8). Ask the children to:

Assessment Opportunity

- Match one numeral, e.g. 6, to another numeral 6, and say the number name.
- Make a variety of sets (using the same or different objects, and arranging them in different ways) for the numbers 2, 3, 4, 5, 6, 7, 8.
- Make sets with different-sized objects (e.g. a set of six small leaves and a set of four large leaves). (Assess whether the children think that the 'large' set of four has 'more'.)
- Match the numerals from PCM 34 to sets (0–8 objects) in PCM 35: Sets of 1–8.
- Count a set of objects and choose the correct numeral for the set.
- Choose a number from 0 to 8 and make the equivalent set of objects. Can you make a set of objects for 0?
- Explore conservation of number (by counting, for example, six objects, assigning the number name, and moving the objects, but not recounting).

Ask:

- Has everyone got a collection of objects?
- Can you make a set with one object and a set of six objects? (Continue with different amounts for two sets.)
- Put the two sets together. How many objects have you got? (Do the children *count on* or *count all* of the objects?)

Ask the children to draw a set of objects for a chosen number.

Let's deepen

Distribute small numerals from PCM 34 and a copy of PCM 35 to each child. The children match numerals to the sets.

Let's strengthen

Using small numerals from PCM 34, can a group of children (working in pairs) match numerals to make pairs (e.g. 7 matched to 7)? Which two children make the most pairs?

(P) Game: Number Bingo

The children play bingo in groups of six. Distribute a bingo card from the Bingo Cards activity printable and small numerals from PCM 34 to each child. The

numbers on the cards are shown using different representations, including dots, tally marks, ten frames and fingers. When you call out a number, e.g. 7, the children look for a representation of 7 on their card and place the correct numeral on it. The first player to cover their card shouts, 'Bingo!' If you would like to involve the whole class, the other groups make their own number representations on their table (using manipulatives).

Let's strengthen

An easier version would involve using counters or sticky notes to cover the bingo card, instead of numerals.

P Story: *Suzie the Eight-Legged Painter* by Bethany Gum

Read *Suzie the Eight-Legged Painter* by Bethany Gum, in which Suzie the spider meets some insects who are afraid of her because she has eight legs instead of six. This story could lead to a discussion about how many legs different animals have:

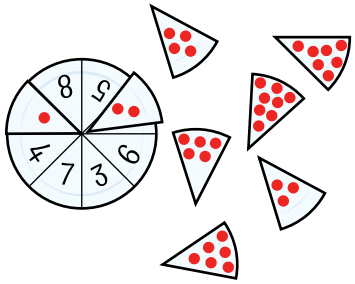
- How many legs does an ant/a giraffe/a bird have?
- Which has more legs: an ant or a spider/an ant or a giraffe?
- Does any animal have three/five/seven legs? Why not?

The children could then make a spider, using play dough, an egg carton and pipe cleaners.

Optional consolidation and extension possibilities

Role Play If you have a shop set up in the Play Area, ask the children to subitise and then count amounts of items in the shop.

Pizza Slices You will need two paper plates per child, small numerals 1 to 8 (see PCM 34), glue and scissors. Before distributing the equipment, draw eight equal sectors on each paper plate, giving you two 'eight-slice pizzas' per child. Tell the children to glue the small numerals onto one of their 'pizzas' (one numeral per slice). Next, they draw dots ('pepperoni pieces'): one dot on one slice, two dots on another slice, three dots on another slice ... and so on, up to eight. They then cut their pepperoni pizza into the eight slices, and place each slice over the corresponding numeral on their other pizza.



D Bingo Play the digital Bingo game for numerals 0 to 8. Before playing the game, print the Bingo digital activity printable and give each child a card. Click the Bingo button to release a ball and continue to release balls until a child fills their card to win the game.

STEM Can the children use 8 objects to make another object (e.g. use 4 lollipop sticks and 4 pieces of Lego to make a table)? Give them an assortment of materials (e.g. straws, play dough, twigs and leaves). Can they make their object using only 8 objects?

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

Day 4, Lesson 4

Consolidation of Number – 0 to 8

Focus of learning (with Elements)

- Explores how the layout of or size of elements in a set has no effect on the overall total (conservation of number) (U&C)
- Subitises (looks at a group of objects and realises how many there are, without counting) number of objects in a set (U&C)

Learning experiences

- D Digital activities: Subitising and Conservation of Number (A–E)
  MAM Routines: Reason & Respond; Quick Images
- C Concrete activities: Consolidation of Number
- P Pupil's Book page 44: Consolidation of Number (0–8)

Equipment

- Manipulatives (bears, counters, beads, links, interlocking cubes, 2-D and 3-D shapes)

Maths language

- There is no new maths language for this lesson.

Warm-up

D Digital activities: Subitising and Conservation of Number (A–E) *MAM* Routines: Reason & Respond; Quick Images

Use the Quick Images activities: (A) Subitise Using Five Frames and (C) Subitise Using Ten Frames. Use the slideshows: (B) Same or Different – Five Frames, (D) Same or Different – Ten Frames, and (E) Subitise Using Manipulatives. In these activities, the children are subitising amounts on five frames, on ten frames, in different arrays and scattered at random. Do they realise that it is easier to subitise and count when the objects are in lines (arrays)? They will look at two different sets and respond to the question: 'What is the same and what is different?'

Teaching tip

For each slide or image, ask:

- Does each set have the same amount?

Some children may think that because the objects are spread out, or the objects are larger, that the set has a greater *number* of objects.

Main event

C Concrete activities: Consolidation of Number

For these activities, the children all have the same type of manipulative (e.g. counters).

Activity 1: Subitising

Distribute manipulatives and a five frame to each child. Say/ask:

- Pick up a handful of counters. Can you *guess* how many you have?
- Put your counters on your five frame.
- Count them. How many do you have?
- How did you show your set/counters on the five frame? (e.g. for four counters: two counters, then a gap, then two more counters)
- Can you pick up *about* five counters? Count them.
- Put them on your five frame. How many did you pick up?
- Who picked up exactly five?
- (Optional question) Who picked up *more* than five? *Less* than five?

Let's deepen

Use a larger number of manipulatives along with the ten frames, if the children are ready. Ask/say:

- Can you pick up about seven counters (etc.)? Count them. Put them on your ten frame.
- How many did you pick up? Who picked up exactly seven?
- (Optional question) Who picked up more than seven? Less than seven?
- Put some counters on your ten frame. Guess how many there are.
- Now count them. Were you correct?

Activity 2: Conservation of Number

Tell the children to put *some* counters in their five frame. Ask:

- How many counters are there on your five frame?
- How do you know?
- Can you move the counters on your five frame (i.e. to new positions)?
- How many counters have you got now? (Do the children need to recount?)

You could try the above activities *without* the 'scaffolding' of the five/ten frames, by asking the children to subitise a random number of manipulatives and then count them.

Assessment Opportunity

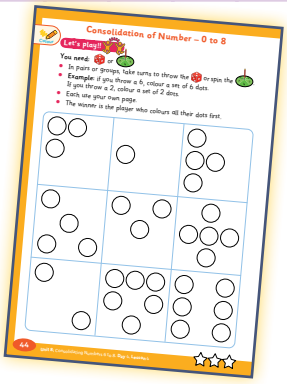
They then arrange the manipulatives in different ways (vertical, horizontal, straight line, crooked line, arrays and/or patterns). Assess whether the children need to recount each time.

Let's strengthen

Draw some of the options above (vertical line, horizontal line, straight line, crooked line, arrays and/or patterns) on the IWB for children who might need inspiration or help in arranging their counters.

You could try these activities using mixed manipulatives (e.g. big bears and small bears, or large triangles and small squares). The children could make, e.g., a set of five small bears and a set of five big bears. Ask them if the sets have the same number. Spread out one of the sets and ask the question again.

P Pupil's Book page 44: Consolidation of Number – 0 to 8



Optional consolidation and extension possibilities

Games Bank Play 'Circle Counting'.

Read *How Many Legs?* by Kes Gray and Jim Field. Prompt the children to subitise the number of legs that each animal has. A reading of this story is available at: edco.ie/qdu9

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

Day 5, Lesson 5

Composition of Number – 1 to 8

Focus of learning (with Elements)

- Investigates various arrangements of manipulatives to prompt different mental images of numbers up to 8, while developing a sense of each number (R)

Learning experiences

D Animation: Birthday Cake
MAM Routine: Reason & Respond

C Maths Stations: Composition of Number (1–8)

Equipment

- Birthday candles (or crayons)
- Manipulatives (bears, beads, links, interlocking cubes, 2-D and 3-D shapes)
- Sorting circles or dividers
- PCMs 34, 36

Maths language

- There is no new maths language for this lesson.

Warm-up

D Animation: Birthday Cake
MAM Routine: Reason & Respond

Teaching tip

Understanding composition of number means that the child understands that numbers are made up of smaller numbers. They can 'see the smaller numbers' inside the larger number.

Start with smaller numbers, for example: 1 to 5. Bring five children to the front of the class. Ask:

- How many children are here?

Assess who needs to count and who can subitise. Count each child and move them aside, showing that a number is made up of 'ones'. Then show that the numbers/children can join together to make the smaller numbers in the

Assessment Opportunity

bigger number (e.g. 1 and 1 makes 2; 1 and 1 and 1 makes 3. We put the 2 and 3 together to make 5.) Ask:

- How could we break up this group of five? (Start with making five separate 'ones' of the line of children.)
- Let's put the group of five back together. Could we break this group of five up in a different way? (We could put these four children together and move one apart.)
- Is there another way? (one first and then four)
- Is there another way? (two first and then three)

Continue until all the combinations have been explored.

Now play the animation. Prompt the children to sing along with the song. The composition of the candles on the birthday cake keeps changing; use the animation to explore the break-up/composition of numbers with the children.

Let's deepen

Explore the combination of '0 and 5' if appropriate for your class.

Main event

Maths Stations: Composition of Number (1–8)

Group 1: Distribute birthday candles (or crayons) and a copy of PCM 36: Birthday Cake to each child. Tell the children to use the PCM to make combinations of six on the cake. Allow them to engage in free play first, making their own combinations. Next, ask them to make six of the same colour candles/crayons. Then, ask them to use candles/crayons of two different colours to make different combinations. (Alternatively, they could use candles/crayons of two different sizes, or use a mixture of candles/crayons.) They could record their favourite combination by drawing the candles/crayons on the PCM.

Groups 2, 3 and 4: Distribute manipulatives, sorting circles/dividers and small numerals from PCM 34 to each child. Allow the children to engage in free play, before asking them to make combinations of the numbers 4 to 8, beginning with 4 (3 and 1; 2 and 2; 0 and 4; 1 and 3; 4 and 0). They place the correct numeral beside each sorting ring, and explain the combinations they have made.

Group 5: Distribute manipulatives, small numerals from PCM 34 and a copy of the ten frames to each child. Observe how the children interact with the manipulatives and ten frames before giving them any direction. Tell them to place a small numeral 5 in front of them on their table, and to make different combinations of that number, using their ten frames and manipulatives. (Move on to numerals 6, 7 and then 8 once they have completed the activity for 5.)

Teaching tip

Do the children understand that the manipulatives can be positioned on different areas of the ten frame, but still make up the same number?

Optional consolidation and extension possibilities

Games Bank Play 'How Many Bears in the Cave?'

Games Bank Play 'Dominoes'.

Form the Number (Integration with PE) Divide the class into groups of one, two, three and four. Call out a number (e.g. 6). The children form this number (two groups of three; a group of four and a group of two, etc.). They count *themselves* to ensure that the total is correct. Will they remember to count themselves?

Games Bank Play 'Shake the Cup'.

Number Shapes Distribute number shapes for numbers 1 to 8 and small numerals (see PCM 34) to each group. Allow the children to explore the equipment for themselves (e.g. to discover how different number shapes fit together or two number shapes fit on top of one). Ask them to place the numeral 5 in front of them and make number–shape combinations for this number. They explore the *different* combinations that they can make. They might like to record their findings in a manner of their choosing, but provide guidance if needed. Continue with numbers 6, 7 and then 8.

Let's deepen

Ask the children to make a set of six objects. They subitise and then count the objects. Tell them to put two of the objects in a bowl. Ask:

- How many did you put in the bowl?
- How many are left?

Are the children subitising the amount correctly or do they need to count?

Ask:

- Can you make a set of eight objects quickly? Count and see if you are correct.
- Can you make smaller amounts with your set of eight objects?
- Can you make *another* set of eight objects? Make smaller amounts with this set of eight objects.

Did the children make *the same* smaller sets, e.g. 2 and 2 and 2 and 2, or did they make, e.g. 4 and 4? Prompt them to try different arrangements.

Day 6, Lesson 6

Extending Composition of Number – 1 to 8

Focus of learning (with Elements)

- Investigates various arrangements of manipulatives to prompt different mental images of numbers up to 10, while developing a sense of each number (R)

Learning experiences

- (D) Digital activity: Composition of Number – Ten Frames *MAM* Routine: Reason & Respond
- (C) Maths Stations: Composition of Number (1–8)
- (P) Pupil's Book page 45: Extending Composition of Number – 1 to 8

Equipment

- Manipulatives (bears, beads, links, interlocking cubes, 2-D and 3-D shapes)
- Number shapes
- Two-sided counters (red and yellow)
- Cuisenaire rods
- PCM 34

Maths language

- There is no new maths language for this lesson.

Warm-up

(D) **Digital activity: Composition of Number – Ten Frames** *MAM* Routine: Reason & Respond

Play the slideshow, which shows different compositions of the same number. Ask:

- What is the same?
- What is different?

The children subitise and then count each number. Observe whether the children can voice the difference, for example:

- The top ten frame has six counters. It has three red counters and three yellow counters.
- The bottom ten frame also has six counters, but it has four red counters and two yellow counters.

Teaching tip

Replay this slideshow over a few days, as it will be challenging for some children at first.

Main event

(C) **Maths Stations: Composition of Number (1 to 8)**

Groups 1 and 2*: Distribute manipulatives, small numerals (see PCM 34) and ten frames to each child. Allow the children to engage with the equipment independently.

Assessment Opportunity

Do they try to replicate what was on the IWB? Tell them to place a numeral 4 in front of them on their table, and make different combinations of that number, using the ten frames and manipulatives. Continue with numbers 5, 6, 7 and then 8. Assess

whether this group can verbalise the difference between two different combinations for the same number, e.g. for 6 (2 blue counters and 4 red counters or 3 blue counters and 3 red counters).

(*Group 3 could do this activity as well, if number shapes are not available.)

C **Group 3:** Distribute number shapes for numbers 1 to 8 and small numerals (see PCM 34) to each child. Allow the children to explore the equipment for themselves (e.g. to discover how different number shapes fit together or two number shapes fit on top of one). Tell them to place the numeral 5 in front of them and make number–shape combinations for this number. They explore the many *different* combinations they can make. They can record their findings in a manner of their choosing, but provide guidance if needed. Continue with numbers 6, 7 and then 8.

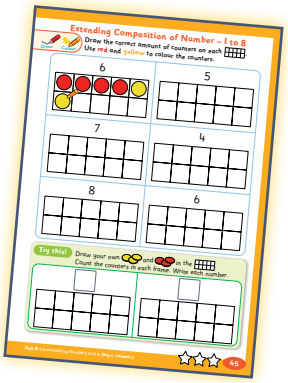
Group 4: Distribute two-sided counters and ten frames to each child. Tell the children to make numbers of their choosing. They draw/write each number they are making on a sticky note or their MWBs. After they make a combination, they turn over some of the counters and make a different combination.

Group 5: Distribute Cuisenaire rods and small numerals (see PCM 34) to each child. Allow the children to explore the properties of the rods for themselves. Ask:

- What can you tell me about this rod (e.g. the six-unit rod)? (It is the same as one purple and one red rod.)
- How many of the white rod (the one-unit rod) are in the red/purple rod?
- Place the numeral 6 on your table. How many ways can you make this rod (the six-unit rod)? (six white rods; one red rod and one purple rod.

The children could record e.g. all the combinations for 6 on their MWBs.

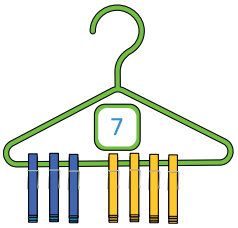
P **Pupil's Book page 45: Extending Composition of Number – 1 to 8**



Optional consolidation and extension possibilities

Egg Cartons Distribute an egg carton, beads or play dough and small numerals (see PCM 34) to each child. The children place a numeral beside the egg carton and make combinations of that number using beads or play dough of two different colour beads.

Hangers and Pegs The children use a clothes hanger and clothes pegs of two different colours to make their own version of a rekenrek.



Day 7, Lesson 7

Equivalent and Non-equivalent Sets – 0 to 8

Focus of learning (with Elements)

- Shows an understanding of differences in value (U&C)
- Uses comparative language (more, less, same) to compare sets to at least 10 (C)
- Uses appropriate gestures and words to convey and make comparisons (C)
- Identifies, recognises and estimates 'more' or 'less' in the real-life context and/or play (R)

Learning experiences

- D Digital activities: More, Less, the Same (A–C)
  MAM **Routine: Reason & Respond**
- C Concrete activity: Making Equivalent and Non-equivalent Sets
- P Pupil's Book page 46: Equivalent and Non-equivalent Sets – 0 to 8

Equipment

- Manipulatives (bears, counters, beads, links, interlocking cubes, 2-D and 3-D shapes) and collections of small objects from nature walks (leaves, twigs, pine cones, etc.)
- PCM 34

Maths language

- a lot, some, one more, one less

Teaching tip

Use this language at every opportunity throughout the day/week, for example:

- Lily has six markers and you have five markers. Who has more? How many more? Who has less?
- There are six buttons on Karim's coat and four buttons on Jack's coat. Whose coat has more buttons? Whose coat has less?

Warm-up

D **Digital activities: More, Less, the Same (A–C)**
MAM **Routine: Reason & Respond**

Play the multiple-choice games: (A) More or Less, (B) Are They the Same? and (C) More or Less – Ten Frames. The games initially focus on the concept of equivalent and non-equivalent sets. In some comparisons it is visually obvious which set has more. The children's attention is drawn to this aspect of counting. Also covered:

- Which set has less?
- Which two sets (out of three sets) have the same amount?

Teaching tip

The games illustrate the *need to count* when the difference in cardinality is not obvious, as opposed to, e.g. a set of eight objects and a set of two objects, where it is *visually obvious* to a child which set has more, and that one set has 'a lot' more.

Main event

C **Concrete activity: Making Equivalent and Non-Equivalent Sets**

Distribute manipulatives, small numerals (see PCM 34) and ten frames to each child. Tell the children to make two sets: one with eight objects and one with two objects. Ask/say:

- Which set has more? How do you know? Do you *need* to count? Count and check that you were right.
- What can you say about this set (the set with eight)? Does this set have 'a lot' more than the other set?
- Which set has less? How do you know? Do you need to count? Count and check that you were right.
- What can you say about this set (the set with two)? Does one set have 'a lot' less than the other?

Assess whether the children realise there is no necessity to count when the difference in the amount is visually obvious. Can they verbalise why there is no need to count? For example: 'It looks like this set has more; I don't need to count; it looks like this set has less.'

Assessment Opportunity

Let's strengthen

Many children cannot grasp the concept of 'less' immediately. The terms 'more' and 'same' occur in their everyday life, so they understand these concepts, but 'less' can be challenging. Some explicit teaching time may need to be spent on this term.

Tell the children to make two sets: one with five objects and one with four objects. Can the children visually see which set has more? (No, because the amounts are too similar.) Ask:

- Which set has more? Do you need to count? Count and check that you were right.
- What can you say about this set (the set of five)? Does it have 'a lot' more than the other set, or just 'some' more?

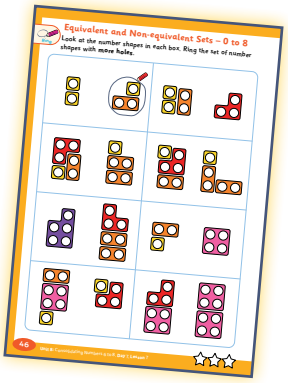
Let's deepen

- How many more objects does the other set have?
- Which set has less? Do you need to count? Count and check that you were right.
- How would you make the sets the same? (Add one more to the set of four or take away one from the set of five.)

Tell the children to place the correct small numeral beside each set they are making, to consolidate giving each set its 'number name'. They then use the ten frames to show equivalent and non-equivalent amounts.

Pair Work: Child A makes a number on their ten frame. Child B makes a number with: one more; the same number; one less.

Pupil's Book page 46: Equivalent and Non-equivalent Sets – 0 to 8



Optional consolidation and extension possibilities

Story Read *More* by Emma Chichester Clark, which explores the concept of 'more'. A reading of this book is also available at: edco.ie/4uj3

Number Shapes Distribute number shapes for numbers 1 to 8 and small numerals (see PCM 35) to each group. Ask:

- Can you show me a number shape with four holes?
- Can you find another number shape that is the same?
- Can you find number *shapes* that will 'make four'? (e.g. two shapes with two holes)
- Can you show me a number shape that has more holes/less holes/one more hole/one less hole?
- Can you put the correct numeral beside each number shape?

Games Bank Play 'One More!'

Nature Walk Go on a nature walk, if feasible. Collect pine cones, feathers, leaves and twigs, and use these to make 'sets' in the classroom.

Pair Work Child A has, for example, a number shape with six holes. Child B swaps the equivalent amount, using two number shapes.

Let's deepen

Child A has, for example, two number shapes totalling seven. Child B swaps the equivalent amount, using two number shapes.

Day 8, Lesson 8

Ordering Numerals and Sets – 1 to 8

Focus of learning (with Elements)

- Orders numerals up to at least 10 (U&C)
- Orders sets without counting and checks by counting (R)
- Explains ordinality using the language of after, before and in-between (C)

Learning experiences

- D Digital activity: Order the Cones
  MAM Routine: Reason & Respond
- C Concrete activity: Ordering Numerals and Sets
- D Digital activity: Jay's Soccer Practice
- P Story: *Six-Dinner Sid* by Inga Moore
- P Pupil's Book page 47: Ordering Numerals and Sets – 1 to 8

Equipment

- Manipulatives (bears, counters, beads, links, interlocking cubes, 2-D and 3-D shapes) and collections of small objects from nature walks (leaves, twigs, pine cones, etc.)
- Number shapes
- Cuisenaire rods
- Story: *Six-Dinner Sid* by Inga Moore
- PCM 34

Maths language

- There is no new maths language for this lesson.

Warm-up

D Digital activity: Order the Cones
MAM Routine: Reason & Respond

Play the interactive game, in which the children arrange the cones (with the numerals 1 to 8) in the correct order. Observe whether the children can put the numerals in the correct order. Are some children having difficulty?

Main event

C Concrete activity: Ordering Numerals and Sets

Assessment Opportunity

Distribute manipulatives, number shapes, Cuisenaire rods and small numerals (see PCM 34) to each child. Ask the children to arrange the numerals 1 to 8 in order, horizontally or vertically (or one way, and then the other way), on their table. Next, tell them to:

- Place the correct number of manipulatives (e.g. links) beside each number (counting carefully).
- Subitise amounts and put the sets in order, then count to check if they were correct.
- Make towers of interlocking cubes, placing the correct number of cubes beside each number.
- Place the correct number shape above each number.
- Place the correct Cuisenaire rod above each number.

The children then put their numerals 1 to 8 in order (without using manipulatives). Say/ask:

- Place one numeral on its own. What comes next/before? (Assess whether the children can put the numerals and then the sets in the correct order – and then assign the correct number to each set – or are some children having difficulty?)
- Place two numerals (e.g. 6 and 8) on their own. What numeral comes in-between?
- Place the numerals 2 and 6 on the table. What numbers are missing? Can you put them in order?
- Put the numeral 7 on its own. Line up all of the numbers that come before this number.
- Put the numeral 3 on its own. Line up all of the numbers that come after this number.
- Place the numerals 6 and 4 on the table. Put them in order: which comes first? Which is the smallest/largest number?
- Place the numerals 6, 4 and 8 on the table. Put them in order: which comes first? Which is the smallest/largest number?

Prompt the children to use the following language: *before*, *after*, *in-between*. Ask:

- What can you tell me about this number (e.g. 6)? (It comes after 5, before 7, in-between 5 and 7.)
- Where could I put the number 7?

Let's strengthen

In pairs, the children mix up the numerals 1 to 8 and then arrange them in the correct order. Child A closes their eyes while Child B takes away a numeral. Can Child A say which numeral is missing when they open their eyes?

Distribute manipulatives and a copy of the Unit 8 Let's Strengthen PCM: Ordering Frame to each child. The ordering frame has the numerals 1 to 8 along the bottom. The children place the correct number of objects in each column.

Let's deepen

The children make a pattern using interlocking cubes. Examples: for the number 4 – one red, one green, one red, one green; for the number 6 – one red, one blue, one red, one blue, one red, one blue.

Unit 8 Let's Deepen PCM: Make Patterns. The children use the PCM to potentially discover that AB patterns only 'work' for even numbers. Do they realise that the pattern does not 'work' for number 7, but it works for number 8?

D Digital activity: Jay's Soccer Practice

Play the interactive game, in which the children fill in the blank to complete a line of numbered cones.

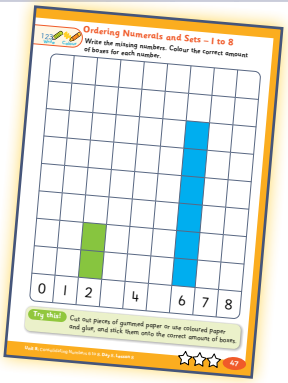
P Story: *Six-Dinner Sid* by Inga Moore

Read *Six-Dinner Sid* by Inga Moore, which tells the story of a cat who goes to six different houses and eats six different dinners a day.

Teaching tip:

A reading of *Six-Dinner Sid* is available at: edco.ie/5ew4

P Pupil's Book page 47: Ordering Numerals and Sets – 1 to 8



Optional consolidation and extension possibilities

Visual Arts The children draw/paint/build the six houses that Sid the cat visits. They could use small numerals 1 to 6 (see PCM 34) to put the correct number on each house.

Games Bank Play 'Pied Piper'.

Day 9, Lesson 9

Writing Numbers 0 to 8

Focus of learning (with Elements)

- Makes numerals creatively (C)
- Discusses, draws and writes representations of numbers 1–8, using manipulatives (C)
- Explores the use of number and plays games to raise awareness of number in their environment (A&PS)
- Notices and recognises the use of numerals as labels in the context of home, the classroom and the school environment (U&C)

Learning experiences

- D Digital activity: Which Number Am I?
  ***MAM* Routine: Reason & Respond**
- D Animations: Number Formation – 0 to 8
- C Concrete activities: Making Numerals
- P Pupil's Book page 48: Writing Numbers 0 to 8

Equipment

- Classroom-sized numerals (or a display on the IWB)
- Play dough
- Sand Area
- Buttons and/or pebbles
- Links and/or interlocking cubes
- Cord and/or wool
- Counters and/or beads
- Tactile numbers in the Pupil's Book

Maths language

- There is no new maths language for this lesson.

Warm-up

D Digital activity: Which Number Am I?
MAM **Routine: Reason & Respond**

Play the interactive game, which slowly reveals each numeral from 0 to 8. The children guess which number will be revealed. Ask the children to say the name of the number as soon as they recognise it.

Main event

D Animations: Number Formation – 0 to 8

Play the numeral formation animations for each numeral. They describe the formation very clearly.

C Concrete activities: Making Numerals

Assess which children have sufficiently developed fine motor skills to enable them to write numerals using a pencil. Assessment Opportunity

Begin by telling the children to trace the numerals 0 to 8 on their table or in the air with their finger. Ask them to trace over the tactile numbers (0 to 8) in their Pupil's Book, using their index finger. Draw their attention to the class-sized numerals (or display on the IWB or use the numeral posters), which they can use for reference. Describe the form of each numeral, or ask a child to describe it, for example:

- How do we make a 6? Start at the top ...
- How do we make a 7?
- How do we make an 8?

Teaching tip

To be mathematically correct, the children are 'forming a numeral', but the phrase 'make a number' will be more familiar to them.

Distribute the equipment listed below to each group.

- Group 1: play dough and/or access to the Sand Area (to draw numerals in the sand with their finger)
- Group 2: pebbles and/or buttons
- Group 3: links and/or interlocking cubes
- Group 4: cord and/or wool
- Group 5: counters and/or beads

Instruct the children to make the numbers 0 to 8 in numerical order, using their equipment. Ask each group:

- Which numbers are easiest to make? (Perhaps 1, 4 and 7 are easiest, because of the straight lines.)

Teaching tip

Mix up the equipment, and ask the children to see if they find it easier to form the numerals with different combinations of equipment. For example, if using cubes and cord, they could use the cubes for the straight parts of a numeral and the cord for the curving parts. Forming numerals in this creative way helps children to internalise the shape and form of each numeral.

Hold up six fingers, and ask:

- How many? (6)

Hold up the class-sized numeral 6, and ask:

- Can you use your ... (e.g. play dough) to make this number?
- What number comes after 6?

Hold up the class-sized numeral 7, and say:

- Use your ... (e.g. play dough) to make this number.

Ask/say:

- How many children are there at this table? (Hold up the class-sized numeral.) Make this number.
- What age are you? (Hold up the class-sized numeral.) Make this number.
- How many windows are there in the classroom? (Hold up the class-sized numeral.) Make this number.
- What number comes in between 6 and 8? (Hold up the class-sized numeral.) Make this number.
- What number am I making in the air/on the wall? (Hold up the class-sized numeral.) Make this number.
- Which number is bigger: 3 or 6? (Hold up the class-sized numeral.) Make this number.
- Which number is less: 8 or 4? (Hold up the class-sized numeral.) Make this number.

Let's strengthen

Distribute copies of PCM 37: Dotted Numerals 6–8 to each child. The children trace over the numerals and practise writing 6, 7 and 8.

One child in a group chooses a numeral and writes it on their MWB. Using manipulatives, the other children make a set containing that number of objects.

Let's deepen

The children write the numerals 0 to 8 in their copies.

P **Pupil's Book page 48: Writing Numbers 0 to 8**

Optional consolidation and extension possibilities

Maths Journals The children make a mark in their journals each time they hear you make a sound (e.g. tap on the desk). Make the sound 8 times. Can the children write the number 8 beside their marks? They count their marks to check there are 8.

Maths Eyes Ask the children to look for numerals 0 to 8 inside and outside the classroom. Tell them to be on the look-out for numerals at home and on their way to school, and report back to the class.

Games Bank Play 'Number Whisper'.

Body Numerals (Integration with PE) Tell the children to make specific numerals on the floor of the PE hall, using their bodies. Start with the easiest one – the numeral 1. They could also do this in groups.

Day 10, Lesson 10

Review and Reflect

Focus of learning (with Elements)
• Reviews and reflects on learning (U&C)

Warm-up

Carry out a warm-up activity of your choice from one of the lessons in this unit.

Main event

Choose from this menu of activity ideas, or choose your own way to best structure this last lesson to suit your needs and the needs of your class.

Maths story	Let's play!
Read one of the suggested stories you may not have had time to try.	Play one of the games or PE activities you did not have time to try.
Maths language	**Choral counting**
Ask the children to use their fingers to form the numerals 6, 7 and 8. They might need help from a partner. Prompt them to use the following language: *after*, *before*, *in-between*. They could also draw the numbers on their MWBs. Use the maths language cards for this unit to revise the key terms. For example: if the image and text are cut apart, can the children match them?	Chant the numbers 1 to 10 or revisit the animation 'Count with Monty'.
Progress Assessment Booklet	**Maths Eyes**
Complete Questions 27–32 on pages 16–17. Alternatively, these can be left to do as part of a bigger review during the next review week.	Tell the children to find numbers and quantities of objects (6–8) inside and outside the classroom.
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. Consult the Unit 8 Let's Strengthen Suggestions for Teachers or the Unit 8 Let's Strengthen PCM.	Use the Unit 8 Let's Deepen PCM.

Notes