Maths and Me: Junior Infants – Short-Term Plan, Unit 12: Operations within 10 (March: Weeks 3&4)

Strand(s)	> Strand Unit(s)	Number > Uses of Number; Numeration and Counting; Place Value and Base Ten; Sets and Operations; Fractions.		
Learning (Outcome(s)	Through appropriately playful and engaging learning experiences children should be able to develop an awareness counting is to quantify; use a range of counting strategies for a range of purposes; develop a sense of ten as the fou when quantities (sets) are partitioned and combined; develop an awareness of part-whole relationships using a vari	t numbers have a variety of uses; develop an aw ation for place value and counting; recognise anc r of models (area, length and set).	reness that the purpose of understand what happens
Lesson		Focus of Learning (with Elements)	CM Learning Experiences	Assessment
	Ordering Sets 1 to many (A&PS)	• 10: Orders sets of objects according to their quantity, up to 10 (AP&S); Uses appropriate strategies to find out how	 Contering Sets 1 to 10 L1 	Intuitive Assessment: responding to
2	Comparing Sets 1 ¹ set has more or les: as' for equivalent s	to 10: Accurately counts and compares equivalent and non-equivalent sets from 1 up to 10 and establishes which ss (R); Uses comparative language (more, less, same) to compare sets to at least 10 (C); Uses the phrase 'is the same sets (C)	 Comparing Sets and Using the Phras 'is the same as' L2 Exploring One More and One Less 	misconceptions
m	Number Relations	ships 1 to 10: Explores the relationship between numbers 1–9 and also their relationship to 10 (U&C)	(1 to 10) L3	Planned Interactions:
4	Partitioning Numb objects (C)	bers 1 to 10: Partitions sets of 2 or more objects (U&C); Represents a verbal context or task using concrete	Making Number Bonds 0 to 10 L5 Combining Numbers 1 to 10 L6	responding to insights gleaned from children's responses
'n	Number Bonds O to numbers 0 to 10 (R	to 10: Explores how a whole object or set can be shared often in different ways (U&C); Creates number bonds for R)	 Sorting Circles L7 Recording a Number Sentence Distoriality 17 	to learning experiences
ى	Combining Numbe concrete objects (C	ers 1 to 10: Combines sets of objects to make at least 10 (U&C); Represents a verbal context or problem, using C)	 Forming a Number Sentence L8 Writing Number Sentences L8 	
7	Recording a Numb and rhymes where	ber Sentence Pictorially: Records a number sentence pictorially (C); Plays games and participates in singing, games : objects are added or taken away (A&PS)	Print resources	Assessment Events: information gathered from completion of
œ	Writing a Numbe r away (A&PS); Reco	Sentence Pictorially: Plays games and participates in singing, games and rhymes where objects are added or taken ords a number sentence pictorially (C)	rupus book pages o I-II Home/School Links Book pages 30–31 PCMs 42, 46–50	the Progress
ი	Review and Reflec	ct : Reviews and reflects on learning (U&C)		Assessment booktet pages 22–24

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.

		c
	information	tor planning
Additional	intornation	

Progression Continua	See 'Junior Infants <i>Maths and Me</i> Progression Continua Overview' for a detailed breakdown of how all progression continua are covered.	
Maths Language	See 'Junior Infants Maths and Me Language Overview', individual lesson plans and Unit 12 Maths Language Cards.	
Equipment	See 'Junior Infants Maths and Me Equipment Overview' and individual lesson plans.	
Inclusive Practices	 See Let's Strengthen and Let's Deepen suggestions throughout lesson plans. See Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed below.) See Unit 12 Let's Strengthen PCM. See Unit 12 Let's Deepen PCM. 	
Integration	See individual lesson plans.	

Background and rationale

- This unit is a two-week block of content located in March. At this stage, most of the children will be competent at writing and naming the numerals 0 to 10. Some children will still need guidance and scaffolding. Raised numerals are always an option for practice, before moving on to making numerals creatively and naming them, tracing over numerals on a PCM, and finally writing numerals independently. Naturally, the key concept is for the children to understand what, for example, the numeral 7 represents, and to be able to assign it to a set of seven objects.
- At this stage, the children will have covered numbers 0 to 10 in terms of ordering, comparing, counting, partitioning and composition. They will now revise all of these concepts and move on to addition and making number sentences.
- They will be 'formally' introduced to the terms 'add' and 'is the same as', and see both in written form. Prior to this, they will have heard these words and used them orally.
- A key component of using 'add' and 'is the same as' is being able to use them in number sentences, to form addition sums.
- The children will listen to and compose simple number stories to bring context to their addition number sentences.

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

Common misconceptions and difficulties

Counting and numeration is one of the most important topics in primary maths. Therefore, it is vital that misconceptions be identified as early as possible, and appropriate interventions implemented.

- The children may 'miss out' numbers, count numbers more than once, or not employ one-to-one correspondence when counting.
- They may not understand that 'more' refers to the amount of objects in a set rather than the size of the objects.
- They may think that in order to compare two groups, one group has to have fewer or more items, and cannot be the same.
- They may think the whole is always *at the top* in a number-bond model.
- They may not realise that the amount does not change when a specific set of objects is rearranged.
- They may find counting backwards tricky, and mistakenly count forwards instead.
- They may use a random approach to finding number bonds to 10, missing some of them.
- They may not be aware of the commutative law of addition, seeing 4 and 3 as a separate number bond from 3 and 4.

The Unit 12 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

- Branching bonds
- One large and two small paper plates (to be used as branching-bond templates) per child
- Set rings with a division (set ring and straw, or diagram on PCM 47) or sorting circles
- Cuisenaire rods
- Montessori bead stair
- Funnel



Teaching tip

Branching bond and sorting circles 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

Ordering Sets 1 to 10

Focus of learning (with Elements)

- Orders sets of objects according to their quantity, up to 10 (A&PS)
- Uses appropriate strategies to find out how many (A&PS)

Learning experiences

DC Animation: Ordering Sets 1 to 10 MAM Routine: Reason & Respond

 Concrete activity: Ordering Sets 1 to 10
 Pupil's Book page 67: Ordering Sets 1 to 10

Equipment

- Interlocking cubes of three or four different colours
- Bowl or container for each child
- Toy fruit or real fruit from the children's lunches (optional)
- Scissors
- PCM 42

Maths language

most, least amount of/fewest

Warm-up

D C Animation: Ordering Sets 1 to 10 MAM Routine: Reason & Respond

Distribute interlocking cubes of three different colours and PCM 42 Numerals 1–10 (Small) to each child. Play the animation and ask the children to help you subitise the amounts of two, then three, different types of fruit in a bowl. They count, assign a number from PCM 42, and order the sets of fruit. Then, using the interlocking cubes, they subitise amounts of cubes in three different colours. Ask them to count and make towers of the cubes, assign a number, and put the towers in order.

Main event

Concrete activity: Ordering Sets 1 to 10

This activity can be used to assess the children's skills in counting and numeration. Distribute scissors, cubes,



bowls and copies of PCM 42 to each group. If you have toy fruit and/or real fruit from the children's lunches, you could use this instead of cubes with some groups.

Let's strengthen

If the children need to refresh their counting skills, try 'pendulum counting', using a small weight tied to the end of a length of string. The children count to 10 to the rhythm of the pendulum as it swings back and forth.

Teaching tip

Begin this activity by using set amounts of 1 to 5 objects, before moving on to set amounts of 6 to 10 objects.

The children choose a handful of cubes (in two different colours) and put them into their bowl/ container. They subitise the amounts, saying which colour they *think* there is the greater amount of in their bowl. They then tip out the cubes onto the table and *count* the quantities for each colour. Observe the strategies they use to count. Next, tell them to build a tower of each set of cubes, and assign the correct numeral to each. Ask:

- Which tower has the most cubes?
- How do you know?
- How many more cubes does this tower have? (Try to confine this to one more.)
- Have you given this tower the correct number?
- Which tower has the least amount of/fewest cubes?
- How do you know?
- Have you given this tower the correct number?
- Can you put the two towers in order?
- Is the amount of cubes in this tower the same as the amount of cubes in that tower? How do you know?

222

Let's strengthen

The children continue with handfuls of cubes as above. They record/draw their findings.

Let's deepen

Move on to using higher numbers (6–10) of cubes. The children put *two* handfuls of each colour into the bowl/container for this. They subitise the amounts, saying which colour they think there is the greater amount of in the bowl. They then tip out the cubes onto the table and count them. Observe the strategies they use to count. Next, tell them to make a tower of each set of cubes, assign the correct numeral to each, and order the towers. They record their findings.

Let's deepen

Move on to using cubes of three or four different colours. The children put a handful *of each colour* into the bowl/container, and guess which colour they have the greatest amount of. They then tip out the cubes onto the table, count them, build towers, assign the correct numeral to each tower, order the towers, and record their findings.

Let's strengthen

The children revise putting jumbled-up numerals 1 to 10 in the correct order. Remember to utilise the CPA approach: either ask the children to build cube towers to match the numeral cards before ordering, or provide some pictorial representations.

Ask:

- (For example, point to the towers of 9 and 6.) Which number is larger? How do you know?
- (Point to the towers of 7 and 10.) Which number is smaller? How do you know?
- What can you tell me about the number ...
 (e.g. 7)? (It is greater than 1, 2, 3, 4, 5, 6. It is less than 10, 9, 8.)

Pupil's Book page 67: Ordering Sets 1 to 10



Optional consolidation and extension possibilities

Maths Eyes In groups, the children subitise and then count the objects on their desk. They make sets of crayons, pencils, lunch boxes and/or bottles of water, and put them in order (depending on the amount of each item).

Website If you have enough tablets for a group, the children could count the spots on the ladybirds and put them in order on the leaves at the following website: edco.ie/eqdz

Nature Walk (Integration with Science) Go on a nature walk where the children collect fallen leaves, twigs or pebbles. Back in the classroom, they arrange the different types of objects into sets, subitise, then count them, and put the sets in order.

Guessing Jar Place ten or fewer assorted objects into a jar, and place the jar up on a shelf, where the objects cannot easily be counted. The children guess (subitise) the amount of objects in the jar. They tell you their guess, or write it on a sticky note and personalise it so that they know that it is theirs. When you reveal their guesses, you give feedback. For example: 'That's a good guess, but this number is higher/lower.' This activity lays the foundation for making estimates in higher class levels. Afterwards, make a data chart of the guesses (showing how many children think the amount of objects in the jar is 7, 8, etc.).

Song For children who are ready to count backwards from 10, play 'Zoom, Zoom, Zoom, We're Going to the Moon' at the following link: edco.ie/zar8

Day 2, Lesson 2

Comparing Sets 1 to 10

Focus of learning (with Elements)

- Accurately counts and compares equivalent and non-equivalent sets from 1 up to 10 and establishes which set has more or less (R)
- Uses comparative language (more, less, same) to compare sets to at least 10 (C)
- Uses the phrase 'is the same as' for equivalent sets (C)

Learning experiences

- Animation: Comparing Numbers 1 to 10 MAM Routine: Reason & Respond
- Animation: Count and Compare Numbers 1 to 10 MAM Routine: Reason & Respond
- Digital activity: Which Set Has More? MAM Routine: Reason & Respond
- Concrete activity: Comparing Sets and Using the Phrase 'is the same as'

Equipment

- Bears, cubes, building bricks (e.g. Lego), blocks or beads
- Collections of objects from nature, such as pebbles, seashells, leaves, twigs or feathers
- Sets of classroom items, such as pencils, crayons and copies

Maths language

is the same as (use the word 'equals' informally)

Warm-up

Animation: Comparing Numbers 1 to 10 MAM Routine: Reason & Respond

This is an opportunity to assess the children's understanding of one-to-one correspondence. Play the animation,

and 'less than'.



which compares the amounts of items in two sets. The first sequence uses the phrase 'is the same as', before 'equals' is introduced (one set is *equal to* the other; 5 *equals* 5). In the next two sequences, two sets are compared using the language of 'more than'

Animation: Count and Compare Numbers 1 to 10 MAM Routine: Reason & Respond

Play the animation, in which the children are reminded how to count a circular model of objects.

Digital activity: Which Set Has More? MAM Routine: Reason & Respond

Play the multiple-choice game. The children will see two sets of fruit (both equivalent and non-equivalent sets). They need to count each set and decide which one has more. Encourage the children to give reasons for their responses.

Main event

Concrete activity: Comparing Sets and Using the Phrase 'is the same as'

Teaching tip

The children might think that two sets can only be compared if one set has more/less objects than the other. In the activity below, the children discover (or for some children, rediscover) that some sets can be equal. Distribute one or two types of equipment to each group (e.g. blocks and bears). The children take a 'random' amount of objects (e.g. they might take 10–12 bears). Tell them to 'divide' their bears into two groups, which need not be equal. Ask:

- Count the objects in one group. How many have you got?
- Count the objects in your other group. How many have you got?

the children to use that language. If one set has

Can you make this set the same as that set?

Now, what can you say? (The set of 6 is the

Move on to mixing the manipulatives/objects, and then using manipulatives/objects of different *sizes* to make

the sets (e.g. a set of copies and a set of rubbers). Do some children automatically think that the copies will

Pair work: Each child takes a handful of objects, and

counts them. If one child's handful *is the same as* their partner's handful, they give themselves a point (i.e. a

tally mark or other mark, or a high five!). The children could also work in groups, with each pair recording

their points. At the end of the activity, which pair in the

group has recorded the most points?

be the larger set because they are larger items?

more objects, ask:

How will you do that?

same as the set of 6.)

- Who has 5 objects in one group and 6 objects in their other group?
- Which group has more?
- Has anyone got two groups that are the same?
- (For two groups that have the same amount:) How many are there in one group? How many are there in your other group? (e.g. 6 and 6)
- What can you say about your two groups?
- Is one group the same as the other group?/Is your group of 6 the same as your other group of 6?

Let's strengthen

Start with lower amounts (less than 5) for less able children.

Let's strengthen

Depending on the ability of your class, use more examples, such as:

• The amount in this set is the same as the amount in that set. 5 is the same as 5. Prompt

Optional consolidation and extension possibilities

Forming Groups (Integration with PE) In the PE hall, call out: 'Make small groups.' The children form small groups (amounts of 10 or less). Either you or a child then counts the amount of children in each group. The group with the most children wins. Also try calling out: 'Make groups that are the same.' Two groups have to make the same amount. (This might take a bit of practice.) Use the language of 'is the same as'.

Maths Eyes Tell the children to look around the classroom or out the window, and to find two sets/ groups of objects. They then guess which group has more or less objects – or you could ask them to tell you if one group is the same as the other group. Count the items to find out.

Day 3, Lesson 3

Number Relationships 1 to 10

Focus of learning (with Elements)

• Explores the relationship between numbers 1–9 and also their relationship to 10 (U&C)

Learning experiences

- Animation: Number Staircase 1 to 10 MAM Routine: Reason & Respond
- C Maths Stations: Exploring One More and One Less (1 to 10)
- Pupil's Book page 68: Number Relationships 1 to 10

Equipment

- Blocks, building bricks (e.g. Lego) or cubes
- Beads and cord/pipe cleaners
- Montessori bead stair
- Pebbles or seashells
- Cuisenaire rods
- One dice per pair/group
- PCMs 42, 46

Maths language

 \mathbf{b}

Warm-up

Let's strengthen

Animation: Number Staircase 1 to 10 MAM Routine: Reason & Respond

Play the animation, in which Monty is seen climbing up the staircase. He starts at Step 1 and continues in leaps of one step until he reaches Step 10, and then begins his descent.

Let's deepen

If the children are able or ready to count backwards, they could 'count' Monty back down to Step 1. You may find that some children have acquired a strong sense of number, but lack a clear understanding of each number in the sequence from 1 to 10 as being one more than the previous number. The digital activity above and the use of concrete materials in the Main Event will help you to gauge the children's understanding and provide remediation.

Main event

Maths Stations: Exploring One More and One Less (1 to 10)

In these activities, the children deepen their understanding of the number sequence 1–10, going up and down in



increments of one. Distribute small numerals from PCM 42 to each child. Then distribute the equipment as follows, rotate it between groups as required, or reduce the variety of equipment if needed. (For example: Group 3 could use the same type of equipment as Groups 1 and 2; Group 4 could use the same type of equipment as Group 5.)

Groups 1 and 2

Distribute blocks, building bricks or cubes. The children use these to build a staircase from 1 to 10. While they are working, ask:

- How will you make the staircase? (Start with Step 1.)
- How many steps does stair 1 have? (one)
- What will you do next? (Make Step 2.)
- How will you make that? (two steps)
- What is the difference between Step 1 and Step 2? (one more step)
- How will you make Step 3? (three steps)
- What is the difference between Step 2 and Step 3? (one more step)

Continue up to Step 10. As they are building the staircase, the children assign the correct numeral to each step. When they have finished their staircase, they 'climb' the stairs. Each time they 'go up' the stairs they verbalise what they are doing. For example: 'I am on Step 1. I jump one more step. Now I am on Step 2. I jump one more step. Now I am on Step 3.' They continue up to 10, and voice that they are increasing by 'one more'. Ask:

- What can you tell me about the number 7? (It is one more than 6 and one less than 8.)
- Which number is greater: 5 or 6? How do you know? Can you prove it?
- Which number is less: 7 or 8? How do you know? Can you prove it?

Group 3

Distribute beads and cord or pipe cleaners. The children use these to make a bead staircase, in a similar arrangement to a Montessori bead stair. Ask similar questions as those posed to Groups 1 and 2. When they 'go up' the bead staircase, the children tell you how they are increasing by one bead each time.



Montessori bead stair

Group 4

Distribute pebbles or seashells and copies of PCM 46 Making Steps 1–10. The children place their pebbles/ seashells on each of the steps on the PCM and assign the correct numeral to each step. Ask similar questions as those posed to the other groups.

Group 5

Distribute Cuisenaire rods. The children lay out the rods in the correct order and assign the correct

numeral to each rod. Ask similar questions as those posed to the other groups. If they are ready/able, they could verbalise coming *back down* the stairs (e.g. 'I am on Step 6. This is one less than 7.').

Let's deepen

In pairs, using only their small numerals 1 to 10 (PCM 42), the children voice what number is *one more*. For example: Child A places a numeral on the table and asks: 'What number is one more?' Child B says or writes the correct answer. The children refer to their staircase to check the answer. They then move on to asking: 'What number is *one less*?'

Pupil's Book page 68: Number Relationships 1 to 10

	Number Relationships I to 10
	Plays in priors Tates starts spanning the but colour the guard to up for a prior, excepted by up on 5, colour any 5 aspares asyste up 0, mins the form spanning of the excepted by the priors of the priors of the coloured excepted by the priors of the the coloured The present to colour of them spanning from standing
68	

Let's Strengthen

If children are having difficulties with the spinner for the Pupil's Book page, a dice could be provided.

Optional consolidation and extension possibilities

Role Play The children set up market stalls and role-play customers buying fruit (e.g. six apples). They then change their mind and ask for one more ... and then one more.

Story Read *Just One More* by Jennifer Hansen Rolli or listen to a reading at: edco.ie/8pu5

Construction STEM Using small numerals 1–10 (PCM 42), ten straws, play dough and hollow pool noodles or toilet/kitchen roll tubes, the children construct a staircase. They begin by rolling out a long snake-like piece of play dough, and then stand the ten straws in a row along its length. Next, they cut the

pool noodles/paper tubes horizontally to make rings similar to napkin rings. (They will need help with this. Alternatively, they use links or old curtain pole rings.) They arrange the small numerals on their table alongside the play dough to number the straws, and then stack their rings over the straws to make steps.

Song Play 'One Elephant Went Out to Play', a song about an increasing number of elephants, at: edco.ie/cxht

Song Play 'One Big Hippo Balancing', a song about an increasing number of hippos, at: edco.ie/76n4

Day 4, Lesson 4 Partitioning Numbers 1 to 10 Focus of learning (with Elements) Partitions sets of 2 or more objects (U&C) Represents a verbal context or task using concrete objects (C) Learning experiences Equipment Digital activity: Partitioning a Hula hoop Number (A) MAM Routines: Reason & Metre stick **Respond, with Think-Pair-Share** Toys from the Play Area Digital activity: Partitioning a Number Straws (B) MAM Routine: Reason & Respond Set rings C Maths Stations: Partitioning Numbers Manipulatives 1 to 10 Collections of objects such as pebbles or buttons Pupil's Book page 69: Partitioning 2-D shapes and 3-D shapes Numbers 1 to 10 PCMs 42, 47

Maths language

share, fair share

• Note: You could also use the following words instead: 'split', 'divide', 'partition'.

Warm-up

C Digital activity: Partitioning a Number (A) MAM Routines: Reason & Respond, with Think-Pair-Share

Assess the children's recollection of partitioning. Do they understand the concept of 'fair' and 'not fair'?



Play the slideshow, in which Lexi and Jay want to share (partition) eight apples. Use the audio questions to discuss how the characters could partition the apples. Click to play or ask:

- How many apples are there?
- Can you guess how many apples there are?
- How could Lexi and Jay share the apples?

- Should they take a handful each?
- Is this a fair share? (4 and 4)
- Could you make a share that is not fair? (e.g. 2 and 6)

Then model partitioning a number, using a hula hoop, with a metre stick as a divider, and toys from the Play Area to show the various partitions.

Digital activity: Partitioning a Number (B) MAM Routine: Reason & Respond

Display the interactive activity. Ask the children to help you decide how Lexi and Jay could share the apples on the plate between them so that it is a fair share.

Main event

G Maths Stations: Partitioning Numbers 1 to 10

Distribute small numerals 1–10 from PCM 42 to each child. Start by distributing the equipment to your groups (see below). Then rotate it between groups as required. You could also reduce the variety of equipment (e.g. Group 5 could use the same type of equipment as Groups 3 and 4).

Groups 1 and 2: Distribute straws, set rings and manipulatives such as bears.

Groups 3 and 4: Distribute collections of objects such as pebbles or buttons and copies of PCM 47 Divided Set Ring and Numeral Box.

Group 5: Distribute 2-D shapes, 3-D shapes and copies of PCM 47.

Activity 1: Sharing random amounts

The children place a random amount of objects (amounts to be 10 or under) beside their set ring/ PCM 47. They arrange the objects so that they can be accurately counted, according to their chosen strategy (e.g. in a horizontal line from left to right, vertically or in arrays). They count the objects and place the correct number either beside their set ring or in the numeral box on PCM 47. They then share (split/divide/partition) the objects, using either the straws with the set ring, or the division on the PCM. They decide on the share and verbalise it (e.g. 'I have 9 shapes. I have shared the shapes like this: 4 squares and 5 circles. This is not a fair share.') In their Maths Journals, they record the shares they made.

Let's deepen

Some children may be ready to record all of the possible shares they could make. Ask/say:

- How did you share your 9 objects?
- (Elicit 'is the same as'.) So, 4 and 5... (is the same as) 9.
- So, 9 is the same as... (4 and 5).
- Have you made *all* the shares? Is there another share you could make?

Activity 2: Sharing specific amounts

The children take a numeral and place it beside their set ring/PCM 47. They count out the corresponding amount of objects, share them, and verbalise this, using the same language as before.

Activity 3: Sharing two types of manipulatives

Using amounts of 10 or under, the children take two types of manipulatives/objects (e.g. 3 red bears and 7 blue bears, or 6 pebbles and 3 seashells). They count the total amount and then divide the two types of manipulatives/objects in their set ring or on PCM 47, and verbalise this, using the same language as before.

Activity 4: Representing a story

Using concrete objects. Say/ask:

- I'm going to tell you a little story, and you are going to make that story!
- One day, Jay and Lexi were running in the park. They saw an apple tree with apples on the

ground. They counted the apples and there were seven of them.

- Can you use your objects (e.g. counters) to show me the seven apples?
- Jay and Lexi put the apples in their backpacks and brought them home.
- Can you show me how they might have shared the apples? (The children use their objects to show you how the seven apples could be shared.)
- How did you share the apples?
- Did anyone share the apples in a different way?
- What can we say about the seven apples? (e.g. 3 apples and 4 apples is the same as 7 apples.)

Let's deepen

Can we make a fair share with seven apples? Why not?

Pupil's Book page 69: Partitioning Numbers 1 to 10



Optional consolidation and extension possibilities

Role Play The children role-play a sweet shop. The shopkeeper gives two customers a bag of 'sweets' (counters). What strategy will the children use to share them? Will they count them and divide them, or share them out, using 'one for you, one for me'? Will it be a fair share?

Forming Groups (Integration with PE) In the PE hall, arrange the children into groups of 10, 8, 6, 4 or 2. Call out: 'Make a fair share!' The children divide themselves accordingly (e.g. a group of 8 should become two groups of 4). Check the share by using one-to-one correspondence. Anyone 'left over' is out/joins you. If you want to extend this, call out: 'Make a share that is not fair!' (This might take a few practice runs!) Maths Eyes Can the children see any examples of partitioned objects around them? (For example: Can they see two bottles of red paint and six bottles of yellow paint? Five copies and three maths books? Two lunch boxes and four bottles of water? Four pencil cases and five bowls of crayons? Three big trees and six small trees?) Ask: 'How many altogether?'

Story Read *The Squirrels Who Squabbled* by Rachel Bright. In the story, two squirrels run into trouble when they do not want to share the last pinecone. A reading is also available at: edco.ie/avxx

Home/School Links Book Page 30 can be completed any time after this lesson.

Day 5, Lesson 5

Number Bonds 0 to 10

Focus of learning (with Elements)

- Explores how a whole object or set can be shared often in different ways (U&C)
- Creates number bonds for numbers 0 to 10 (R)

Learning experiences

Digital activity: Creating Branching Bonds MAM Routine: Reason & Respond

Maths Stations: Making Number Bonds 0 to 10

Equipment

- Per child: One large and two small paper plates (to be used as number-bond templates)
- Lengths of string or cord
- Manipulatives
- Small-world animals
- PCM 42

Maths language

• There is no new maths language for this lesson.

Warm-up

Digital activity: Creating Branching Bonds MAM Routine: Reason & Respond

Open the interactive activity. Move the apples on the big plate to create different combinations on the

small plates (e.g. five apples as 1 and 4, 4 and 1, 3 and 2, 2 and 3, 0 and 5 or 5 and 0). Ask the children to tell you which one they would choose.

Main event

Maths Stations: Making Number Bonds 0 to 10

Use these activities to assess the children's understanding of the



composition and partitioning of number,

as well as the empty set (zero). Distribute small numerals from PCM 42 to each child, and distribute the equipment as follows.

Groups 1 and 2: Distribute manipulatives, large and small paper plates, and lengths of string/cord. The children position their plates and string as per the diagram below (you could show this on the IWB).



Branching bond

Groups 3, 4 and 5: Distribute manipulatives and copies of PCM 48 Number Bond Template.

In all groups, the children start with the numeral 2, placing it above the top plate in their number bond template. They count out two manipulatives (e.g. cubes) and place them in the top plate. Ask:

- Can you share your 2 cubes among your small plates?
- How will you share your two cubes? (1 and 1; prompting and help needed for 2 and 0, and 0 and 2.)
- Will it be a fair share?
- Who made a fair share?
- Did anyone make a share that was not fair? (e.g. 2 and 0, or 0 and 2)
- What can you tell me about the number 2? (1 and 1 is the same as 2.)

Continue as above for numbers 3 to 10, going through all of the combinations in a sequenced format (not randomly).

Teaching tip

Vary the orientation of the PCM/paper plates as shown below. Children can become accustomed to always seeing the number bond diagram in the same orientation, and they might think that the larger number always has to be at the top.



Branching bond template

Branching bond template

Let's deepen

The children might like to go ahead of you. They could draw their own number bond diagram for each number on their MWBs or in their Maths Journals, and fill it in. They could also use the Pupil Pack branching bonds.

Now represent a story, using small-world animals or a drawing on the board. Say/ask:

- A farmer has two fields and 9 cows.
- The farmer wants to give the cows the chance to eat the grass in both fields.
- How could we start sharing the cows between the two fields?
- We could put 1 in this field, and how many in this field? What other shares could we make?

Ensure that the children realise there are still only 9 cows, no matter which way you 'share' them.

Optional consolidation and extension possibilities

Making Number Bonds (Integration with PE)

- Use hula hoops and/or masking tape to make number bond diagrams, or draw them on the ground, using chalk. How many children can fit into one hula hoop/ring? Call out: 'Fair share!' The children divide themselves equally into the other two hula hoops/rings. Anyone 'left over' is out/ joins you.
- Starting with a low number (e.g. 4), call out the number or hold up a large numeral. The children form number bonds of 4 (e.g. 2 children holding hands, and 2 children holding hands). Anyone 'left over' is out/joins you. (This will take some practice.)

Rhymes Listen to 'Number Bonds to 10 Rhymes' at: edco.ie/mfrk

Story Read *Number Bond Friends* by Jessie Wilson, in which the number bonds are shown as pairs of friends.

Website The children make different combinations of numbers by putting beads on a string at the following website: edco.ie/zchk

Games Bank Play 'Set Rings' from the Games Bank.

Let's Deepen Use the Unit 12 Let's Deepen PCM to play 'Snowball Bonds', in which the children vertically stack cubes of two different colours to make the snowball bonds. The first player to finish wins the game.

Day 6, Lesson 6

Combining Numbers 1 to 10

Focus of learning (with Elements)

- Combines sets of objects to make at least 10 (U&C)
- Represents a verbal context or problem, using concrete objects (C)

Learning experiences Equipment		
 Digital activity: The Number Slide MAM Routine: Reason & Respond Concrete activity: Combining Numbers 1 to 10 Pupil's Book page 70: Combining Numbers 1 to 10 	 Large funnel Five additional funnels (or kitchen/toilet roll tubes) Manipulatives such as counters, bears or cubes Small-world animals PCM 42 Unit 12 Maths Language Cards 	
Maths language		

add

Warm-up

Digital activity: The Number Slide MAM Routine: Reason & Respond

Teaching tip

Draw the children's attention to the word 'add' (instead of 'and') and reiterate the phrase 'is the same as'. Play the slideshow, in which one child (Jay) and two children (Lexi and Dara, grouped together) line up at the top of the slide, and then slide down into the pool. Different combinations of characters (up to 5) are seen coming down the slide. For each pair of slides, ask/say:

Slide 1

- How many children are at the top of the slide?
- How many children are waiting at the bottom of the slide?

Slide 2

- How many children are there altogether?
- Let's tell the story: Jay was at the top of the slide. Along came Lexi and Dara. They all went down the slide together into the pool. Splash!

Concrete activity: Combining Numbers 1 to 10

Do the children understand the notion of joining/combining two sets together? Why are they doing this? Do they



Main event

understand the language of 'how many altogether', 'add' and 'is the same as'?

Use a large funnel to demonstrate two separate sets of objects (e.g. 3 blue cubes and 2 red cubes) going into the funnel and coming out the other end together. Ask/say:

- How many cubes are there in this set? (Hold up the corresponding numeral, e.g. 3.)
- And how many cubes are there in this set? (Hold up the corresponding numeral, e.g. 2.)
- If I put *all* of the cubes into the magic funnel, how many cubes will come out the other end?
- How will we find out?

I put 3 cubes into the funnel: 1, 2, 3.

Now, I *add* my other 2 cubes: 1, 2. It's like making a cake ... I'm adding the ingredients!

Now let's count *all* of our cubes. How many have we got?

• Can we write a story about our cubes?

Model and write the following 'story' on the IWB (or use the maths language cards for 'add' and 'is the same as'): *3 add 2 is the same as 5*. Say/ask:

 Let's make up some stories. (Let some of the class try using the funnel and bear manipulatives.)

One day there were 2 bears running in the park. Along came 3 more bears. They saw a magic funnel and they all jumped in!

How many bears are there altogether?

• Now let's make our number sentence: 1 add 2 is the same as 3.

• Let's write the story! (Write it on the IWB or use the maths language cards.) 2 add 3 is the same as 5.

Distribute small numerals 1 to 10 from PCM 42, two types of manipulatives and a funnel (or kitchen/toilet roll tube) to each group. Each child makes two sets by taking a handful of each type of manipulative. They count the amount in each set, and assign the correct numeral to it. They put one set through the funnel, and then the other. They verbalise their number sentence as they do so (e.g. 4 cubes add 3 cubes is the same as 7 cubes). They might also like to make up a story, using small-world animals, and verbalise it. (For example: 'There are 5 sheep in the field. I add 2 more sheep. 5 sheep add 2 sheep is the same as 7 sheep.')

Teaching tip

The children will need lots of exploratory activity and practice to be able to make and verbalise their own number sentence. There will be plenty of trial and error.

Pupil's Book page 70: Combining Numbers 1 to 10



Optional consolidation and extension possibilities

Role Play Using the class shop or market stall, the children role-play buying and making combinations of goods (e.g. 3 apples and 2 oranges). How many did they buy altogether?

Home/School Links Book Page 31 can be completed any time after this lesson.

232

Story Read *How Many Legs?* by Kes Gray. This story poses questions such as: 'How many legs would there be if a boy and a polar bear came to tea?' The number of legs keeps growing until the answer is: 'Lots of legs!' A reading is also available at: edco.ie/qdu9 **Rap** Compose a rap from number sentences with the terms 'add' and 'is the same as'. The rap could have pauses for the children to call out the answers, for example:

1 add 1 is the same as ... (2)
My hands got stuck when I used the glue!
1 add 2 is the same as ... (3)
I saw a monkey climb up a tree.
2 add 1 is the same as ... (3)
I jumped up high and what did I see?
2 add 2 is the same as ... (4)
I ran over and opened the door.
3 add 1 is the same as ... (4)
A great big lion began to roar!

Forming Groups (Integration with PE) In the PE hall, call out: '2 add 3!' In response, the children form groups of 2 and 3. Then call out: 'How many altogether?' or '... is the same as ...' In response, the groups of 2 and 3 join up and say the answer. Any 'wrong' groups are out.

Song Listen to 'Here Is the Beehive'. This song is good revision of the numbers 1 to 5. A recording is available at: edco.ie/rcng

Days 7 and 8, Lesson 7

Recording a Number Sentence Pictorially

Focus of learning (with Elements)

- Records a number sentence pictorially (C)
- Plays games and participates in singing, games and rhymes where objects are added or taken away (A&PS)

Learning experiences

- Toolkit: Sorting Circles
 - Digital activity: Find the Missing Number MAM Routine: Reason & Respond
 - Concrete activity: Recording a Number Sentence Pictorially
 - Pupil's Book page 71: Recording a Number Sentence Pictorially

Equipment

- Manipulatives such as cubes, counters or bears
- Small-world animals (optional)
- PCMs 42, 49

Maths language

There is no new maths language for this lesson.

Warm-up

D Toolkit: Sorting Circles

Open the Manipulatives e-Toolkit and select the Sorting Circles tool. Use the tool, along with the drawing feature in the toolbar, to demonstrate how to record a number sentence pictorially.

Digital activity: Find the Missing Number MAM Routine: Reason & Respond

Play the multiple-choice activity, in which the children are shown a number sentence, represented pictorially. They need to count the items shown and decide what the correct answer is, from the options provided. Allow them time to answer each question and to give reasons for their answer.

Main event

Concrete activity: Recording a Number Sentence Pictorially

Give each child: one copy of PCM 49 Mini Flashcards; one copy of PCM 42; and two types of manipulatives. Using two types



of manipulatives will help the children to clearly see the two 'parts' of the number sentence (e.g. 6 cubes and 2 bears). The children make their own number sentences, using the manipulatives, and verbalise what they are doing. (For example: 'I have 1 bear and I add 5 cubes. I put them together and count them all.'). The children count and assign the correct numeral to each set of manipulatives. They then make a number sentence pictorially, using the flashcards for 'add' and 'is the same as' from PCM 49 (e.g. 1 add 5 is the same as 6). This is an opportunity to assess whether they understand that they are putting two sets together and 'finding' a greater number. Assess the following:

- Can they put the flashcard 'add' in the correct place? (between the two numerals)
- Can they use both flashcards to show the number sentence pictorially? (e.g. 4 add 1 is the same as 5.)
- Can they count the amount of cubes *altogether* and assign the correct numeral?
- Can they read their number sentence?
- Pupil's Book page 71: Recording a Number Sentence Pictorially

123 The recording a Number Sentence Di
The sentences. Count. Write must
Contraction of the source of t
5 add 5 100mm
<u>~~</u> ~ 006
is the some as
CARAA LLC
odd is the same as
Share -
- 000007
add 1 ithur -
DOD - N
DOD Maranan
is the same as
Trethal w.
Write a number sentence for your partner on a
Can they write the answer?
Ding 12: Operations while 20 met 2014

Optional consolidation and extension possibilities

Games Bank Play 'I Spy' from the Games Bank. **Maths Eyes** Can the children make number stories based on items in the classroom or outdoors? (For example: 'There are 3 copies and 2 books on my table. That makes 5 items altogether.' or 'There are 2 red cars in the car park and 6 silver ones. That makes 8 cars altogether.') **Song** Listen to 'The Goats Came Marching'. Can the children count the amount of goats? A recording is available at: edco.ie/hj68

Day 9, Lesson 8

Writing a Number Sentence Pictorially

Focus of learning (with Elements)

- Plays games and participates in singing, games and rhymes where objects are added or taken away (A&PS)
- Writes a number sentence pictorially (C)

Learning experiences

Concrete activity: Forming a Number Sentence Concrete activity: Writing Number Sentences

Equipment

- Monty the puppet
- Manipulatives such as cubes, counters or bears
- Small-world animals
- PCMs 49, 50
- Unit 12 Maths Language Cards
- Tactile numbers in Pupil's Book
- Numeral posters

Maths language

There is no new maths language for this lesson.

Warm-up

Concrete activity: Forming a Number Sentence

You could take this opportunity to revise

children to the front of the classroom. Using Monty the puppet and the maths language cards for 'add' and 'is the same as', ask/say:

How many children do we have here? (4)

the identification of numbers 1 to 10

using the Numeral posters. Bring four

Monty has forgotten how to count properly! Let's help him to count the children.

Next, bring three more children to the front of the classroom. Ask/say:

- How many children are we going to add? (3)
- How many children do we have here now? (7)

- Let's help Monty to count them.
- (Show the maths language cards for 'add' and 'is the same as'.) I have these words. What can I do with them? Let's ask Monty!
- Where will I put 'add'? (in between the two groups of 4 children and 3 children)
- Where will I put 'is the same as'? (after the 3 children)
- Who can read this number sentence for me?

Teaching tip

This is also an opportunity to revise spatial/ positional language.

Main event

C Concrete activity: Writing Number Sentences

In groups, the children take turns being the 'scribe', and work together to make a number sentence based on the composition of the group. For example:

- At this table, there are 2 boys and 4 girls. (Can they verbalise the following: '2 boys add 4 girls is the same as 6'?)
- At this table, there are 2 girls with long hair and 5 girls with short hair. (Can they verbalise the following: '2 girls add 5 girls is the same as 7'?)

Let's strengthen

The children could revise the formation of the numerals 1 to 10 by tracing over the tactile numbers in their Pupil's Book.

Distribute a copy of the mini flashcards for 'add' and 'is the same as' from PCM 49 Mini Flashcards to each child. They practise reading and then writing the words in their Maths Journals or on their MWBs.

Next, distribute a copy of PCM 50 Recording Number Sentences, manipulatives in a variety of colours and/ or types (to allow for making 'distinct' number sentences), and small-world animals to each child. The children make number sentences, using the manipulatives, and then write each number sentence in their Maths Journals or on their MWBs. Ask:

Now, can you write the number sentence/story on your MWBs?

- Which number do we write first? (2)
- What comes next? ('add')
- Where do we put 'add'?
- What comes next? (5)
- What comes next? ('is the same as')
- What comes next? (7)

Can each group read your number sentence?

To help the children become confident in writing their number sentences, they might like to use the small-world animals to make number sentences.

Let's strengthen

Using the flashcards and manipulatives to make pictorial number sentences might be sufficient for the children. Writing whole number sentences may be too challenging at this stage.

Let's strengthen

The children may need additional 'scaffolding'. Use the Unit 12 Let's Strengthen PCM: Working Through Number Sentences. The children use manipulatives to solve the number sentences. and verbalise what they are doing. (For example: 'I have 3 green counters and 2 red counters. 3 green counters add 2 red counters is the same as 5 counters.')

Let's deepen

Write some number sentences on the board for the children to copy, using the following format:

- 2 add 3 is the same as
- 4 add 4 is the same as
- 5 add 3 is the same as

The children write each number sentences in their Maths Journals or on their MWBs, and use manipulatives to help them find the answer.

Let's deepen

Ask the children to write a complete number sentence, and use manipulatives to check their answer.

Let's deepen

The children might like to use zero as part of their number sentence. They could compose a story using the small-world animals. (For example: 'I have 5 sheep, but no sheepdog. I can show this number story like this: 5 add 0 is the same as 5'.)

As a conclusion to this activity, enable the children to discover that combining and 'partitioning' are two sides of the same coin. The children make a combination of their choice and verbalise it. (For example: 'I have 4 blue counters. I add 5 yellow counters. 4 blue counters add 5 yellow counters is the same as 9 counters.') Ask/say:

- If you break up your 9 counters, how many blue counters will you have?
- How many yellow counters will you have?
- I'm going to walk around with my magic wand!
- Will I be able to turn your two small sets back into your big set of 9?

Let's deepen

Do the children discover that 4 blue counters add 5 yellow counters is the same amount as 5 yellow counters add 4 blue counters?

Help the children to discover various combinations (and partitions) of the numbers 1 to 10.

Let's deepen

The children might like to informally explore their total amounts by 'taking away'. (For example: '6 yellow counters add 3 green counters is the same as 9 counters. If I *take away* my 6 yellow counters, I have my 3 green counters left.')

Optional consolidation and extension possibilities

Forming Groups (Integration with PE) In the PE hall, arrange the children into small groups of 2, 3 and 4. Call out: 'Break it up!' The children divide themselves into even smaller groups. Call out: 'Make 10!' The children then form groups of 10. Anyone 'left over' is out/joins you.

Making a Number Sentence Get seven children to line up together, and ask the rest of the class to make up a number sentence about them. (For example: 'There are 3 children with black shoes and 4 children with brown shoes. 3 children add 4 children is the same as 7 children.').

Visual Arts The children use just two colours to 'paint a number sentence' (e.g. 2 blue cars add 3 red cars is the same as 5 cars). Alternatively, they could use the two colours as they wish, and then investigate whether they can make a number sentence based on the result (e.g. 4 yellow blobs add 6 purple blobs is the same as 10 blobs). **Hula Hoops** Lay two hula hoops on the classroom floor. Using the Maths Language Cards for 'add' and 'is the same as', the children form number sentences by standing in the hula hoops (e.g. 4 *children add 3 children is the same as 7 children*). The rest of the class 'reads' the number sentence.

Story Read *The Mission of Addition* by Brian P. Cleary. This book explores different number stories. A reading is available at: edco.ie/dajd

Song Listen to 'The Addition Song for Kids' (note: the song and video feature the + and = symbols). A recording is available at: edco.ie/wgh9

Stone Age Number Sentences The children paint flat stones in different colours. When the paint has dried, they write a number on each stone and use the 'add' and 'is the same as' mini-flashcards from PCM 49 to make number sentences.

Day 10, Lesson 9

Review and Reflect

Focus of learning (with Elements)

Reviews and reflects on learning (U&C)

Warm-up

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

Main event

Use this menu of activity ideas to choose how best to structure this last lesson of the unit to suit your needs and the needs of your class.

Let's talk!	Let's play!
Revisit some of the digital resources that you might not have had time to use, such as the e-manipulative Sorting Circles.	Play some of the PE or classroom games you did not have time to try.
Maths language	Maths strategies and models
Revise the following language: most, least amount of/fewest, is the same as, and, share, fair share, add. Use the maths language cards for this unit to revise	 Try some mental maths with the children. Say/ask: I see 2 buses. Along come 3 more. How many buses are there now?
apart, can the children match them?	How did you work that out?
Progress Assessment Booklet	Maths eyes
Complete Questions 43–48 on pages 22–24. Alternatively, these can be left to do as part of a bigger review during the next review week.	The children find combinations of objects in the classroom (e.g. 3 crayons and 5 markers).
Let's strengthen	Let's deepen
The children try doing some maths sentences without the scaffolding, using PCM 50 Recording Number Sentences. Identify children who might benefit from extra practice with some of the key concepts or skills in this unit. Use the Unit 12 Let's Strengthen PCM and consult	The children do some simple addition word problems at: edco.ie/vd5a They will need help reading the text, but this could be done as an oral and then a written activity (i.e. read the problem to them, and then they write the number sentence).



