




Maths and Me: Short-Term Plan, Unit 3: Fractions (October: Weeks 1&2)

Strand(s) > Strand Unit(s)		Number > Fractions; Numeration and Counting.	
Learning Outcome(s)		Through appropriately playful and engaging learning experiences children should be able to recognise and name fractions according to their part-whole relationships; explore the concept of equivalence in terms of simple fractions	
Lesson	Focus of Learning (with Elements)	CM	Learning Experiences
1	Whole and Parts: Articulates and shares prior understanding of sharing and fractions (C); Recognises and identifies whole and parts, equal and unequal parts (U&C)		(D) Notice & Wonder L1, 3, 6 (D) Think-Pair-Share L1, 3, 4 (D) Reason & Respond L1-3, 6 (C) Equal Parts of Squares L1 (D) Quick Images L3-5 (D) Write-Hide-Show L3-5
2	Halves and Quarters: Establishes and identifies a half/quarter as one of two/four equal parts of a whole object, shape or length (U&C); Uses the appropriate fraction name and fractional notation (C)		(C) Build it; Sketch it; Write it L3-6 (D) Concept Cartoon L4 (C) Game: Who Has More? L4 (D) Would This Work? L5 (C) Halving and Quartering Numbers to 20 L5 (D) Three-Act Task L6 (D) Choral Counting L6
3	Same Value, Different Appearance: Discusses and explains the relationship between 'related fractions' halves and quarters (fraction families) (C); Explores the concept of equivalence between halves and quarters (U&C); Explores different models to demonstrate understanding of simple equivalent fractions (C)		Planned Interactions: responding to insights gleaned from children's responses to learning experiences
4	Comparing and Ordering: Compares and orders fractions (R); Justifies the ordering of fractions and whole numbers along a number line (R)		
5	Halves and Quarters of Sets: Establishes and identifies halves and quarters of amounts/sets (U&C)		
6	Counting in Halves and Quarters: Explains multiple fractions as more than one part of a whole (C); Counts combinations of wholes and parts (U&C); Counts with fractional parts forwards and backwards (U&C)		Print resources Pupil's Book pages 20-25 Home/School Links Book pages 10-11 PCMs 7, 8, 9, 10, 11, 12
7	Review and Reflect: Reviews and reflects on learning (U&C)		Assessment Events: information gathered from completion of the unit assessment in the Progress Assessment Booklet page 11

Key: Elements: (U&C) Understanding and Connecting; (C) Communicating; (R) Reasoning; (A&PS) Applying and Problem-Solving. **CM:** *Cuntas Miosúil*: 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 '2nd Class <i>Maths and Me</i> Progression Continua Overview' for a detailed breakdown of how all progression continua are covered.
 Maths Language	See '2nd Class <i>Maths and Me</i> Maths Language Overview', individual lesson plans and Unit 3 Maths Language Cards.
 Equipment	See '2nd Class <i>Maths and Me</i> Maths Equipment Overview' and individual lesson plans.
Inclusive Practices	<ul style="list-style-type: none"> ● See Let's Strengthen and Let's Deepen suggestions throughout lesson plans. ● See Unit 3 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed below.) ● See Unit 3 Let's Strengthen PCM. ● See Unit 3 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- This unit is a two-week block of content, located in October, positioned to come after Numbers to 100 and Addition and Subtraction 1, which looked at doubles, etc.
- This unit is specifically positioned to come before:
 - Time (half past, quarter past/to)
 - 2-D Shapes (Fractioning of 2-D shapes is included in this unit, but only with the shapes covered to the end of 1st Class. Partitioning and combining shapes will be also developed further as part of the unit on 2-D shapes.)
 - Location and Transformation (half turns, quarter turns)
 - Measuring (halves and quarters of standardised measures).
- The three major categories of fraction models are area model, linear model and set model. Evidence suggests that providing opportunities for students to work with all three models plays a crucial role in developing a conceptual understanding of fractions.
- **Area model:** This refers to fractions represented as parts of an area or shape, where the divisions are typically through or to the centre, in more than one direction. Examples:
 - Concrete (real objects): pie, pizza, cakes (circular, square or rectangular)
 - Concrete (manipulatives): fraction circles, pattern blocks, geoboards, tangrams, paper shapes of regular polygons, sheets of paper (e.g. paper folding)
 - Pictorial: representations of the concrete examples.
- **Linear model:** This refers to fractions represented parts of a length, where lengths are typically horizontal and the divisions are typically vertical. Examples:
 - Concrete (real objects): ribbon, string, straws, lollipop sticks, baguette (French bread)
 - Concrete (manipulatives): fraction strips, number rods (e.g. Cuisenaire), strips of paper, connected interlocking cubes
 - Pictorial: representations of the concrete examples, plus fraction wall, number line, part-whole bar model
- **Set model:** This refers to fractions as subsets of a whole set of objects, people, etc. Examples:
 - Concrete (real objects): people, buttons, muffins, sweets
 - Concrete (manipulatives): counters, cubes, bears, marbles
 - Pictorial: representations of the concrete examples, plus branching bonds

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

Common misconceptions and difficulties

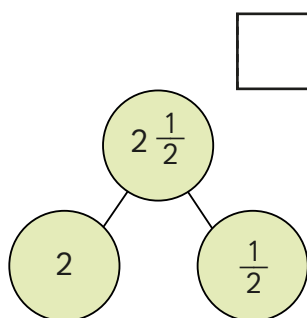
While fractioning and sharing are very much a part of everyday life and language, they can often be spoken about and represented in an inaccurate or inexact way, e.g. 'Can I get the bigger half?' Therefore, communicating, creating and representing fractions must be done as accurately as possible.

- The children may incorrectly share or divide the whole into an incorrect number of parts or unequal parts.
- They may incorrectly assume that a whole or part has to be a certain size.
- They may incorrectly assume that all equal parts should look identical (have exactly the same shape, as well as size).
- They may incorrectly assume that $\frac{1}{2}$ of something is always larger than $\frac{1}{4}$ of something else.
- They may have difficulties using fractional notation (i.e. fraction numbers such as $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$).
- They may have difficulties comparing and ordering fractions because, for example, they incorrectly assume that $\frac{1}{4}$ is larger than $\frac{1}{2}$ because 4 is larger than 2. They may also think that more parts (larger denominator) means a larger whole.
- The children may have difficulty grasping the conceptual understanding of equivalence, i.e. that the same fraction can be written and expressed in a variety of ways (e.g. $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$). Here, lots of practical experience with fractions is essential. Also, using the phrase 'same value, different appearance' may be of benefit.
- The children may incorrectly assume that you can only count whole numbers, and not fractions.

The Unit 3 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

- Representations of various everyday objects (e.g. cake, pizza, sandwich)
- Diagrams of 2-D shapes, divided into various parts/fractions and/or with various parts shaded
- Branching bonds (used to show the partitioning of mixed numbers)
- Bar models
- Fraction number lines for comparing and ordering fractions and counting forwards and backwards in halves and quarters



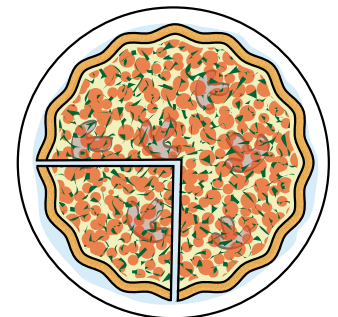
Branching bonds



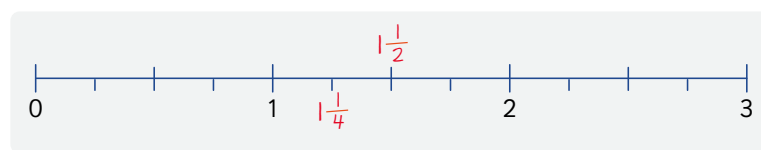
Bar model



2-D shape showing half a circle



Pizza showing a quarter



Fraction number lines

Teaching tip

The following manipulative printables are available to support the unit: 2-D Shapes, Branching Bonds and Bar Models. Click on the resources icon on the *Maths and Me* book cover on edcolearning.ie

Day 1, Lesson 1

Whole and Parts

Focus of learning (with Elements)

- Articulates and shares prior understanding of sharing and fractions (C)
- Recognises and identifies whole and parts, equal and unequal parts (U&C)

Learning experiences

- D** Digital activity: The Café **MAM Routines: Notice & Wonder, with Think-Pair-Share; Reason & Respond**
- D** Digital activity: Equal Parts
MAM Routine: Reason & Respond
- C** Concrete activity: Equal Parts of Squares
- P** Pupil's Book page 20: Whole and Parts

Equipment

- Squares (e.g. pre-cut paper squares, squares made from modelling materials) or PCM 7: Squares
- Scissors (for cutting out shapes)
- Classroom resources suitable for demonstrating fractions

Maths language

- fraction(s), whole, part, equal, unequal, greater than, less than, fair, unfair, share, divide, split, equally, fairly

Warm-up

- D** Digital activity: The Café **MAM Routines: Notice & Wonder with Think-Pair-Share**

Display the poster and click to play or ask:

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

Use Think-Pair-Share to gather feedback

Main event

- D** Digital activity: The Café
MAM Routine: Reason & Respond

Display the poster and, using the Zoom and Spotlight tools to focus on areas of the scene, click to play or ask:

- What does the word 'whole' mean?
- Do you see anything that is whole in the picture?
- What does the word 'part' mean?
- Do you see anything that is a part in the picture?
- Pick one of the whole items. How might this be split into parts? (Can the children come up with different ways to do this?)
- Look at Jay's pizza. How many parts is the pizza in?
- Can you think of other ways to split a whole pizza?
- Look at the cake on the counter. How many parts does it have?

- Can you think of other ways to split a whole cake?
- Look at the clock. What parts are on a clock?

You can also ask:

- How many parts are in each whole?

Using the items in the poster as a stimulus, prompt the children to identify how many parts are in each whole and to describe the scene. For example:

- The cake/pizza is the whole. Each slice is a part.
- The cookie jar is the whole. Each cookie is a part.

Note: While there are some obvious wholes and parts (e.g. the whole cake, the slices of pizza), it is important that the children recognise other wholes and parts (e.g. the whole chair, of which the legs are parts; the whole plant, of which the leaves, stalk/stem and roots are parts; the whole pizza, of which the toppings, base and cheese are parts).



D Digital activity: Equal Parts

MAM Routine: Reason & Respond

Display the poster. The characters are in the café attempting to share their food. Using the Zoom and Spotlight tools to focus on areas of the scene, click to play or ask:

- Why do you think Lexi looks unhappy?
- Do Dara and Lexi have equal shares?
- Who has more?
- Who has less?
- What shape is the whole sandwich?
- What is the whole?
- How many parts are there?
- How might this have been shared differently?
- How could Mia have split her pizza?
- How many parts of pizza are on the poster?

You could also ask:

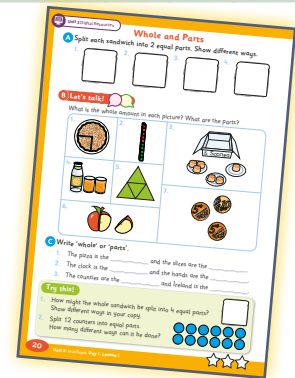
- Can you use your MWBs to show how Dara could have cut the sandwich into four equal parts?
- Can you use your MWBs to show how Mia could have split her pizza into four equal parts?

C Concrete activity: Equal Parts of Squares

In this activity, the children explore various ways to divide squares into 2 and then 4 equal parts (using the squares or PCM 7 suggested in the Equipment section).



P Pupil's Book page 20: Whole and Parts



Ask the children to demonstrate how the square sandwich could have been shared fairly to create equal parts. (This could be done by drawing the 'splits' or by cutting out the whole shapes and folding them to explore equal shares.) Ask:

- How could this be shared fairly between two?
How can you prove it works?
- How could this be shared fairly between four?
How can you prove it works?

Teaching tip

While the primary focus of this lesson is to emphasise the vocabulary of *whole*, *parts*, *equal* and *unequal*, it is likely that many children may also use/suggest specific fractions names – *half*, *halves*, *quarters*, etc. If the children suggest this vocabulary, incorporate it into the discussions.

Let's deepen

Challenge some children to model how a square could be shared among eight, three, etc.

Optional consolidation and extension possibilities

Integration As the theme for this unit is The Café, there are lots of opportunities for cross-curricular integration. Language, English: The themes of Food/Eating out; Language, Gaeilge: *An téama Bia agus/nó Sa bhaile/Ag siopadóireacht.*

Understanding of fractions can also be reinforced in other subjects. Geography, Science and Technology: Estimating and measuring, using standard units of measure, including simple fractions. Visual Arts: Symmetrical art, completing scenes/images by

drawing the other half. Music: Notation, whole beats, half beats and quarter beats.

Maths Eyes Ask the children to find examples of wholes and parts in the classroom and/or at home. They could draw the examples or take photos to share with the class.

Review and Reflect Use the Prompt Questions Poster.

Days 2 and 3, Lesson 2

Halves and Quarters

Focus of learning (with Elements)

- Establishes and identifies a half/quarter as one of two/four equal parts of a whole object, shape or length (U&C)
- Uses the appropriate fraction name and fractional notation (C)

Learning experiences

- D** Digital activity: Halves and Quarters **MAM Routine: Reason & Respond**
- D** Video: Halves and Quarters **MAM Routine: Reason & Respond**
- C** Concrete activity: Fraction Stations
- P** Pupil's Book page 21: Halves and Quarters

Equipment

- Selection of 2-D or 3-D shapes that can be traced around (e.g. attribute blocks or tangrams) or shape templates/stencils
- Drinking/construction straws
- Scissors
- Paper squares, rectangles and circles (e.g. coffee filter papers)
- Pieces of ribbon, string and wool
- Clothes pegs
- Play dough
- Interlocking cubes, or links for making a chain
- Small mirrors
- Tracing paper or baking parchment
- PCM 8, PCM 9

Maths language

- half, halves, quarter(s), $\frac{1}{2}$, $\frac{2}{2}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$

Warm-up



- D** **Digital activity: Halves and Quarters**
MAM Routine: Reason & Respond

Play the multiple-choice activity. Nominate individual children to come up to the IWB to select the correct answer. Alternatively, as a whole class, the children could 'vote' for their chosen answer, using Write-Hide-Show to identify the answer with the most votes, which can then be selected. Use each question to discuss fraction names.

Ask:

- What fraction names could be used for this item?
- What other way can fractions be labelled?

Let's strengthen

Some children may benefit from additional supports to reinforce the connection between the fraction words and the fraction numbers. See PCM 8: Fraction Language Cards. See the Unit 3 Let's Strengthen Suggestions for Teachers for other ways to use these cards.

Main event



- D** **Video: Halves and Quarters**
MAM Routine: Reason & Respond

Play the video and ask the children to respond to the questions on their MWBs, giving reasons for their responses as appropriate.



- C** **Concrete activity: Fraction Stations**

Give the children plenty of time to explore the fractional parts of real objects via concrete activities. The stations are designed to allow the children to develop their fractional understanding of the following models for fractions:

- Area model: Dividing up or sharing a single whole item/object into different fractions
- Linear model: Identifying the location of fractions presented in a linear way or naming objects that are presented in a linear order as fractions.

Note that the third model for fractions (the set model) will be explored in depth in Lesson 5.

Select the fraction stations that best suit your class and resources, but try to ensure that both *area* and *linear stations* are represented. You could complete the stations over Days 1 and 2. The children in each group could work individually or in twos or threes, depending on the resources available. Ask the children to keep any samples of their work, as they can be incorporated as part of Lesson 3.

Teaching tip

Some station tasks may be completed faster than others. Suggest that the children bring their Pupil's Book to the stations to get started on page 21 if they finish early.

Divide the class into groups. Give each group PCM 9: Fraction Stations.

- Station A – Area. Equipment needed: scissors, paper and PCM 10: 2-D Shapes, or concrete 2-D/3-D shapes, or shape templates/stencils.
- Station B – Linear. Equipment needed: scissors, paper and straws.
- Station C – Area. Equipment needed: paper squares, rectangles and circles.
- Station D – Linear. Equipment needed: pieces of ribbon, string or wool, and clothes pegs.
- Station E – Area. Equipment needed: play dough.
- Station F – Linear. Equipment needed: interlocking cubes or links.

Let's strengthen

Demonstrate, if necessary, how there can be lots of different ways to make halves and quarters, even when using the same shape. See the Unit 3 Let's Strengthen Suggestions for Teachers.

To assess understanding during or after the activities, ask:

- Can you show me one half (one quarter, etc.)? How do you know you are correct?
- How did you make it?
- How do we write it?

Let's strengthen

Some children may benefit from the following additional supports:

- When making or showing halves, they could use small mirrors to check that the two parts are equal.
- They could use tracing paper or baking parchment to trace one half of the shape and then turn it over to check that the other half is the same.
- When making quarters, encourage the children to appreciate how quartering relates to halving, i.e. halve the whole, then halve the half.

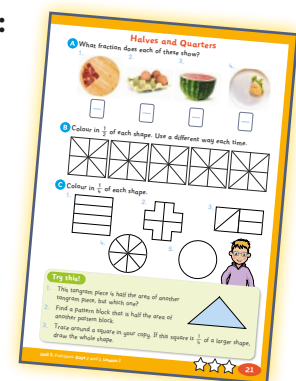
Let's strengthen

Some children might benefit from extra practice identifying fractions of shapes. (See Unit 3 Let's Strengthen PCM part A.)

Let's deepen

Challenge some children to identify other fractions they could create at the Fraction Stations.

P Pupil's Book page 21: Halves and Quarters



Optional consolidation and extension possibilities

Fractions Display The display could include examples of the children's work from the Fraction Stations alongside appropriate labels (see PCM 8: Fraction Language Cards).

Story Read *Give Me Half!* by Stuart J. Murphy. A reading of the story is available at: edco.ie/qgvc

Investigation Station Set up a station where the children can explore fractions further over the course of the unit. The equipment could include the items used for the Fraction Stations.

Maths Eyes

- Use catalogues, supermarket flyers, brochures, etc., to collect images that represent halves and quarters. Add these to the Fractions Display.
- Ask the children to find examples of halves and quarters in the classroom and/or at home. They

could draw the examples or take photos to share with the class.

Home/School Links Book Complete p.10.

Review and Reflect Use the Prompt Questions Poster.

Day 4, Lesson 3**Same Value, Different Appearance****Focus of learning (with Elements)**

- Discusses and explains the relationship between 'related fractions' halves and quarters (fraction families) (C)
- Explores the concept of equivalence between halves and quarters (U&C)
- Explores different models to demonstrate understanding of simple equivalent fractions (C)

Learning experiences

- D** Digital activities: Unit Fractions (A) & (B) **MAM Routine: Quick Images, with Write-Hide-Show**
- D** Digital activity: Pizza Slices **MAM Routines: Notice & Wonder, with Think-Pair-Share; Reason & Respond, with Build it; Sketch it; Write it**
- C** Concrete activity: Fraction Stations
- P** Pupil's Book page 22: Same Value, Different Appearance

Equipment

- Selection of 2-D or 3-D shapes that can be traced around (e.g. attribute blocks or tangrams) or shape templates/stencils
- Drinking/construction straws
- Scissors
- Paper squares, rectangles and circles (e.g. coffee filter papers)
- Pieces of ribbon, string and wool
- Clothes pegs
- Play dough
- Interlocking cubes, or links for making a chain

Maths language

- same value, different appearance

Teaching tip

The children may have difficulty grasping the concept of equivalence, i.e. that the same fraction can be written and expressed in a variety of ways.

For example: $\frac{1}{2} = \frac{2}{4}$, or one whole = $\frac{2}{2} = \frac{4}{4}$. It is essential for the children to get lots of practical experience with fractions. Using the phrase 'same value, different appearance' will also be of benefit.

Warm-up

- D** **Digital activities: Unit Fractions (A) & (B) MAM Routine: Quick Images, with Write-Hide-Show**

Choose activity (A) or (B). Briefly reveal and then hide the image(s). Ask the children to write the fraction in

word form and/or fractional notation on their MWBs. Next, ask them to show their answers. (If using fractional notation, assess whether the children are using it correctly.) Record all the proposed answers

on the board. Be careful not to confirm the correct answer. Ask:

- Which answer are you going for?
- What proof do you have?
- Does anybody have different proof?
- Are there any written answers that are actually

the same amount (same value, different appearance)?

- Are there any answers that are unreasonable/unlikely because they don't make sense? Which ones? Why do you think this?

Main event

D Digital activity: Pizza Slices

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

Display the poster. One pizza has been cut into two equal parts, and the other has been cut into four equal parts. Click to play or ask:

- How many slices does Jay have?
- How many slices does Mia have?
- Who has more pizza – Jay or Mia?
- Jay thinks that this is not fair. What do you think?
- If they both eat one half of their pizza, how many slices of their pizza will they each eat?
- What fraction of pizza will they each have left? How many slices of pizza will they each have left?
- One half equals how many quarters?
- Two halves equals how many quarters?
- If Jay cuts each of his slices of pizza in half again, what fractions will he have then?
- If Mia shares her pizza equally with Jay, Lexi and Dara, what fraction will they each get?

Let's strengthen

Encourage the children to use multiple expressions of fractions: in both word form ('2 quarters') and fractional notation $\frac{2}{4}$.

Encourage the children to verbalise/show wherever fractions can be expressed in a simpler form (e.g. $\frac{2}{4}$ as '1 half' or $\frac{1}{2}$)

Using Build it; Sketch it; Write it, ask the children to build, sketch and/or write a model to prove their reasoning.

Finally, ask:

- Use the phrase 'same value, different appearance' to describe your model(s).

Teaching tip

In their maths journals, the children could use images/words to record what they built, sketched or wrote.

C Concrete activity: Fraction Stations

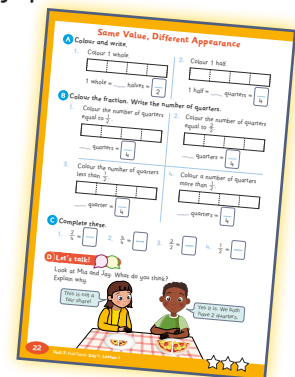
Revisit some of the Fraction Stations from Lesson 2 or look at the work samples of quarters that were produced. Ask:

- Can you see any connection between how to make quarters and how to make halves?

Using a sample of quarters and halves made from the same object/shape, ask:

- What do you notice about the half you made?
- Is it the same size/length as some of the quarters? How many?
- Is this the same with other objects or shapes? If so, we say they have the 'same value, different appearance'.
- One half equals how many quarters?
- Two halves equals what?

P Pupil's Book page 22: Same Value, Different Appearance



Let's strengthen

Pupil's Book p.22, Activity A: To make this more concrete and less abstract, some children may benefit from marking and colouring $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, etc., on lollipop sticks and using these to compare.

Optional consolidation and extension possibilities

Home/School Links Book Complete p. 13. The Fraction Squares game can be played at any stage during the rest of this unit or during the review week (end of October). Tip: cover the page with a clear acetate so the game can be played repeatedly.

Story Read *Cuddly Kittens: Discovering Fractions* by Megan Atwood.

Review and Reflect Use the Prompt Questions Poster.

Day 5, Lesson 4

Comparing and Ordering

Focus of learning (with Elements)

- Compares and orders fractions (R)
- Justifies the ordering of fractions and whole numbers along a number line (R)

Learning experiences

- D** Digital activity: Equivalent Fractions **MAM Routine: Quick Images, with Write-Hide-Show**
- D** Digital activity: Who Ate More? **MAM Routines: Concept Cartoon, with Think-Pair-Share; Build it; Sketch it; Write it**
- C** Game: Who Has More?
- P** Pupil's Book page 23: Comparing and Ordering

Equipment

- Selection of 2-D or 3-D shapes that can be traced around (e.g. attribute blocks or tangrams) or shape templates/stencils
- Drinking/construction straws
- Scissors
- Paper squares, rectangles and circles (e.g. coffee filter papers)
- Pieces of ribbon, string and wool
- Clothes pegs
- Play dough
- Interlocking cubes, or links for making a chain

Maths language

- compare, order

Warm-up

- D** **Digital activity: Equivalent Fractions MAM Routine: Quick Images, with Write-Hide-Show**

Briefly reveal and then hide the image(s). Ask the children to write the fraction in word form and/or fractional notation on their MWBs. Next, ask them to show their answers. (If using fractional notation, assess whether the children are using it correctly.) Record all the proposed answers on the board. Be careful not to confirm the correct answer. Ask:

- Which answer are you going for?
- What proof do you have?
- Does anybody have different proof?
- Are there any written answers that are actually the same amount (same value, different appearance)?
- Are there any answers that are unreasonable/unlikely because they don't make sense? Which ones? Why do you think this?

Main event

- D** **Digital activity: Who Ate More? MAM Routines: Concept Cartoon, with Think-Pair-Share; Build it; Sketch it; Write it**

Display the Concept Cartoon and click each character to hear them discuss who ate more bread. Using Think-Pair-Share, ask:

- What do you think? Explain why.
- Who do you not agree with? Why is it that they think that?
- How can we find out whose thinking is correct?

Ask the children to use Build it; Sketch it; Write it. They use concrete materials and/or sketches to prove/disprove the characters' ideas.

Teaching tip

In their maths journals, the children could use images/words to record what they built, sketched or wrote.

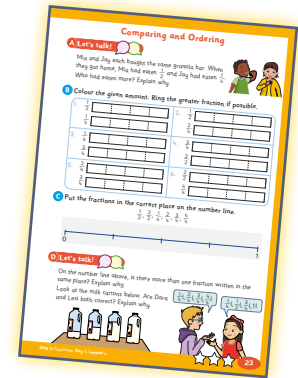
Let's strengthen

Some children may benefit from additional supports, such as PCM 11: Whole and Fraction Number Cards. See the Unit 3 Let's Strengthen Suggestions for Teachers.

C Games Bank: Who Has More?

Play the game in teams initially (one group/half of the class against the other). The team who thinks that they have the larger fraction in that round must prove it by using materials or drawings. When the children are more confident, allow them to play individually or in small groups.

P Pupil's Book page 23: Comparing and Ordering



Optional consolidation and extension possibilities



Story Read *The Doorbell Rang* by Pat Hutchins. A reading of the story is available at: edco.ie/yfef

Review and Reflect Use the Prompt Questions Poster.

Days 6 and 7, Lesson 5

Halves and Quarters of Sets

Focus of learning (with Elements)

- Establishes and identifies halves and quarters of amounts/sets (U&C)

Learning experiences

- D** Digital activity: Multiple Fractions
MAM Routine: Quick Images, with Write-Hide-Show
- D** Digital activity: Cookies **MAM Routine: Would This Work?**
- C** Concrete activity: Halving and Quartering Numbers to 20
MAM Routine: Build it; Sketch it; Write it
- P** Pupil's Book page 24: Halves and Quarters of Sets

Equipment

- Interlocking cubes
- Counters
- Two or four small containers (e.g. fast-food cartons) per pair

Maths language

- sets

Warm-up



D Digital activity: Multiple Fractions MAM Routine: Quick Images, with Write-Hide-Show

Briefly reveal and then hide the image(s). Ask the children to write the fraction in word form and/or fractional notation on their MWBs. Next, ask them to

show their answers. (If using fractional notation, assess whether the children are using it correctly.) Record all the proposed answers on the board. Be careful not to confirm the correct answer. Ask:

- Which answer are you going for?
- What proof do you have?
- Does anybody have different proof?

- Are there any written answers that are actually the same amount (same value, different appearance)?
- Are there any answers that are unreasonable/unlikely because they don't make sense? Which ones? Why do you think this?

Main event



D Digital activity: Cookies

MAM Routine: Would This Work?

Display the activity, in which Dara and Lexi are in the café with a plate of cookies (12) between them.



Ask:

- If Dara and Lexi share the cookies equally, how many will they each get?
- What are you being asked to do?
- How could you model this task?
- How could you check?
- Is there more than one way to do this?

Click to reveal the approaches suggested by the characters. Allow the children time to comment on each, and justify if the methods/opinions work. Following on from this, tell the children to use these or other strategies to divide the same amount among four. Ask:

- What if we divide them among four?
- How could you model this?

C Concrete activity: Halving and Quartering Numbers to 20

MAM Routine: Build it; Sketch it; Write it

Distribute 20 interlocking cubes to each pair. Ask the children to model various ways in which to halve and quarter numbers to 20. Use Build it; Sketch it; Write it. Show the children the following example, with the number 12:

- Build it: Join 12 cubes together as one 'stick' and experiment with breaking the stick in various places to make halves and quarters.
- Sketch it: Draw linear models and/or bar models to represent the cubes/counters above.
- Write it: Use branching bonds and/or maths sentences, e.g. $6 + 6 = 12$, $\frac{1}{2}$ of 12 is 6.

Repeat but with other objects in class that cannot be stuck together. Encourage the children to suggest a strategy that works for these. For example, dividing equally between two/four small containers.

Teaching tip

- In their maths journals, the children could use images/words to record what they built, sketched or wrote.
- Using linear models (i.e. joining a set of cubes to make a line) can be a useful way to explore fractions of a set, thereby creating connections between the set and linear models.

Let's strengthen

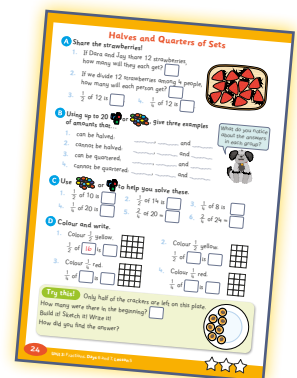
- Some children may benefit from selecting amounts up to 10 initially and then progressing to numbers up to 20 when they are more confident.
- Some children might benefit from extra practice identifying fractions of sets. (See Unit 3 Let's Strengthen PCM, part B.)

Let's deepen

Challenge the children to:

- Spot patterns among numbers that can or cannot be halved and quartered. Can they describe the number patterns using words such as *odd and even*, *doubles*, etc?
- Calculate the whole amount when shown a half or a quarter of that amount. (See Pupil's Book p.24, Try this!)

P Pupil's Book page 24: Halves and Quarters of Sets



Optional consolidation and extension possibilities

Games Bank Play 'Who Has More?'

Investigation Station Add some of the resources used in this lesson to the investigation station, where the children can explore fractions of sets.

Home/School Links Book Complete p.11.

Let's Deepen Create maths questions for the Headline Story (See Unit 3 Let's Deepen PCM).

Story Read *Clean Sweep Campers* by Lucille Recht Penner.

Story Read *Jump, Kangaroo, Jump!* by Stuart J. Murphy. A reading of the story is available at: edco.ie/dmv4

Review and Reflect Use the Prompt Questions Poster.



Days 8 and 9, Lesson 6

Counting in Halves and Quarters

Focus of learning (with Elements)

- Explains multiple fractions as more than one part of a whole (C)
- Counts combinations of wholes and parts (U&C)
- Counts with fractional parts forwards and backwards (U&C)

Learning experiences

- D** Digital activity: Fraction Bonds of One Whole
MAM Routine: Notice & Wonder, with Reason & Respond
- D** Digital activity: Apples and Oranges
MAM Routine: Three-Act Task, with Build it; Sketch it; Write it
- D** Digital activities: Fractions – Halves; Fractions – Quarters
MAM Routine: Choral Counting
- P** Pupil's Book page 25: Counting in Halves and Quarters

Equipment

- Drinking/construction straws, lollipop sticks or matchsticks

Maths language

- There is no new maths language for this lesson.

Warm-up

- D** **Digital activity: Fraction Bonds of One Whole**
MAM Routine: Notice & Wonder, with Reason & Respond

Display the poster, which shows a cake cut into four equal pieces, to explore the concept of sharing one whole. Click to play or ask:

- In what different ways can this cake be shared between Jay and Mia?
- What are you being asked to do?
- How could you model this task?
- How could you check you are correct?
- Can you solve this problem in more than one way?
- Could you use branching bonds?
- Could you use number sentences? Write them on your MWB.
- Write the fraction Jay will get if he gets an equal share.
- How else can you write this fraction?
- If Mia has three pieces, what is the fraction?

Main event

D Digital activity: Apples and Oranges
MAM Routine: Three-Act Task, with Build it; Sketch it; Write it

Distribute straws, lollipop sticks or matchsticks to each child.



Act 1: Notice & Wonder

Play the video. Click to play or ask:

- What do you notice? What do you wonder? (Note any 'wonderings' that could become the basis for a subsequent Maths investigation.)
- (Reveal the focus question.) Before they were cut, how many apples were there? How many oranges were there?

Act 2: Productive Struggle

Look at the image and click to play or ask:

- Write an estimate that is too high on your MWB.
- Write an estimate that is too low.
- Now write a reasonable estimate.

The children work in pairs or small groups to answer the focus question. If necessary, prompt them by clicking to play or asking:

- Do you have enough information? What else do you need to know?

Once the children explain that they need to see the fractions into which the fruit has been cut and the number of each part, click to reveal the second image.

Click to play or ask:

- What information do you have now?
- To get an answer, what needs to be done?
- What strategies can you use?

Using Build it; Sketch it; Write it, the children choose their preferred way to mathematically model their strategies/solution(s). They could use straws, lollipop sticks or matchsticks at half/quarter intervals and lay them end-to-end to model the fractions of fruit.

Act 3: The Big Reveal

As the second image from Act 2 remains onscreen, the children share and discuss their strategies, solutions and models. Click to play or ask:

- What answer did you get?
- How did you get your answer? What strategies did you use?
- What do you think was the most efficient strategy?

Then, flip the image to play the 'big reveal' video. Click to play or ask:

- Is this the answer [Are these the answers] that you expected? Why or why not?
- What 'I wonder' questions did you answer?
- Do you have any new 'I wonder' questions?

D Digital activities: Fractions – Halves; Fractions – Quarters
MAM Routine: Choral Counting

See it, then say it! Play the slideshows. The children count aloud along with the text/images.

Let's strengthen

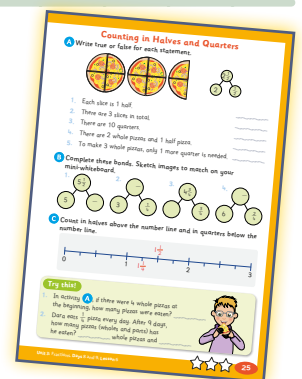
Some children may benefit from additional reinforcement:

- They could use PCM 11: Whole and Fraction Number Cards, and put the cards in order. See the Unit 3 Let's Strengthen Suggestions for Teachers for ways to use these cards.
- They could use PCM 12: Blank Fraction Number Lines to create collaborative fraction number lines. See the Unit 3 Let's Strengthen Suggestions for Teachers for ways to use these number lines.

Let's deepen

Challenge the children to describe the patterns they notice when counting in halves and quarters.

P Pupil's Book page 25:
Counting in Halves and Quarters



Optional consolidation and extension possibilities

Maths Journals In their maths journals, the children could use images/words to record what they did in the main part of the lesson.

Story Read *If You Were a Fraction* by Trisha Speed Shaskan. A reading of the story is available at: edco.ie/b7jh

Games Bank Play 'Who Has More?'

Review and Reflect Use the Prompt Questions Poster.

My Maths Fact File The last section of page 122 could be completed anytime after this lesson

Day 10, Lesson 7

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.

<p>Let's talk!</p> <p>Use Think-Pair-Share to review the unit. Individual children could present examples of their own drawings/work/constructions to the class, and talk about what they have learned.</p>	<p>Let's play!</p> <p>Play a game from the Games Bank.</p>
<p>Maths language</p> <p>Ask the children to explain the following terms (perhaps using drawings on their MWBs): <i>fraction, half/halves, quarter(s), same value, different appearance</i>.</p> <p>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?</p>	<p>Maths models</p> <p>Ask the children to give and/or draw examples of the models they used in this unit. For the various tasks and investigations, how did they record their findings? What did they build, sketch or write? Did they use concrete materials, shapes, open number line or bar models?</p>
<p>Progress Assessment Booklet</p> <p>Complete Questions 11–13 on page 11. Alternatively, these can be left to do as part of a bigger review during the next review week.</p>	<p>Maths eyes</p> <p>Go for a walk through the school. Ask the children to look for examples of fractions. How are they similar to different/from those looked at during this unit? Take photos of each to display/compile in a digital slideshow.</p>
<p>Let's strengthen</p> <p>Identify children who might benefit from extra practice with some of the key concepts or skills in this unit. Consult the Unit 3 Let's Strengthen Suggestions for Teachers.</p>	<p>Let's deepen</p> <p>Select one of the cognitively challenging tasks on the Unit 3 Let's Deepen PCM (this could be displayed on the class board) and encourage the children to work together in groups to model solutions for the task. Alternatively, each group could choose their own preferred task to solve.</p>

