

# Intensive English Language / New Arrivals Program

## Mathematics and Numeracy: Teaching Learning Sequence

<b>Strand</b>	Number and algebra
<b>Sub-strand</b>	Fractions
<b>Levels</b>	E F Year 4, Year 5
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<b>Year developed</b>	2016

### *Use this units with your own student cohort*

Teachers are invited to trial and modify this teaching learning sequences. Content may need to be modified to meet the particular learning needs of a student cohort. Designers started with the same template, and while there was broad agreement on the use of the template – there may be some variations between this Teaching Learning Sequence and other Teaching Learning Sequences that were developed by DECD educators.

- differentiated activities may be found in either the activities column or the evidence and differentiation column
- generally, language elements were not repeated once they were recorded in an earlier activity
- cross curriculum priorities are included in some unites but not in others.

A feedback form is available at [tiny.cc/IELP-NAP-TLS](http://tiny.cc/IELP-NAP-TLS). Please forward feedback to [Erika Vonaspem](mailto:Erika.Vonaspem@sa.gov.au)



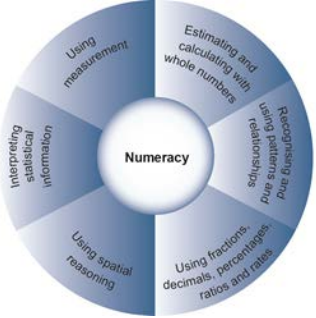
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## Mathematics and Numeracy Teaching Learning Sequence

### WHAT DO WE WANT STUDENTS TO LEARN?

Strand: Number and Algebra Substrand: Fractions		Learning Goals		
		Achievement Standards	Content Descriptions	Proficiencies
Mathematics Levels: E,F (Year 4,5)	Time Line:	<b>E</b> Students recognise common equivalent fractions in familiar contexts and make connections between fractions.  Students locate familiar fractions on a number line.	E Investigate equivalent fractions used in contexts E Count by quarters, halves and thirds, including with mixed numerals. E Locate and represent these fractions on a number line.	The student demonstrates the following proficiencies.  <b>Understanding</b> <ul style="list-style-type: none"> <li>Compare fractions with the same and different denominator.</li> <li>Represents fractions to problem solve.</li> </ul> <b>Reasoning</b> <ul style="list-style-type: none"> <li>Explain, demonstrate and evaluate strategies used to problem solve.</li> </ul> <b>Problem-solving</b> <ul style="list-style-type: none"> <li>Solve equivalent fraction problems.</li> <li>Choose and investigate strategies to solve a problem.</li> </ul>
<b>Overarching Ideas</b> There are numbers between whole numbers. There is a relationship between the number of pieces the whole is divided into and the size of the fraction (the more pieces, the smaller the fraction) We can compare and order fractions and place them on a number line. Different fractions can represent the same quantity eg $\frac{1}{2} = \frac{2}{4}$ and we call this equivalence. You can calculate with fractions.		<b>F</b> Students order unit fractions and locate them on number lines.  Students add and subtract fractions with the same denominator(students continue patterns by adding and subtracting fractions)	F Compare and order common unit fractions and locate and represent them on a number line. F Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator.	

## WHAT DO WE WANT STUDENTS TO LEARN?

Numeracy General Capability	Other General Capabilities	Cross Curriculum Priorities
<p><b>Level 4</b></p> <p><b>Interpret Proportional Reasoning</b></p> <p>Students visualise, describe and order equivalent fractions.</p>  <p><b>Apply Proportional Reasoning</b></p> <p>Students solve problems using equivalent fractions</p>	<p><input type="checkbox"/> <b>Literacy</b></p> <p>The literacy capability of <i>Composing Texts</i> is guided by and reported in the sequence of the IELP Progress Report. In addition, the following aspects of the <i>Comprehending Texts</i> continuum are taught and assessed.</p> <p><b>Level 3</b></p> <p>Typically by the end of Year 4, students:</p> <p><b>Navigate, read and view learning area texts</b> navigate, read and view different types of texts with illustrations and more detailed graphics</p> <p><b>Listen and respond to learning area texts</b> listen to spoken instructions with some detail for undertaking learning area tasks, listen to identify key information in spoken and audio texts, including audio-visual texts, and respond to texts read aloud</p> <p><b>Interpret and analyse learning area texts</b> interpret literal information and make inferences to expand topic knowledge using comprehension strategies</p>	

## HOW WILL WE KNOW IF THEY'VE LEARNT IT?

Diagnostic Assessment: (What do the students bring?)	Assessment of Learning	Assessment as Learning	Assessment for Learning
<p>How are you going to find out what students bring?</p> <p>George Booker's 'Building Numeracy' Moving from diagnosis to intervention' Select common fraction questions from tests</p> <p>4.1 Equal Parts Tool</p> <p>4.2 Fraction naming Tool</p> <p>4.3 Fraction Making Tool</p> <p>4.4 Fraction Recording Tool</p>	<p>Top 5 Assessment Sheet containing photos as evidence of student learning. (See Appendix)</p> <p>Observation of students manipulating objects, completing tasks</p> <p>Update Mathematics and Numeracy Report, Levels DEFG, Fractions</p> <ul style="list-style-type: none"> <li>- <i>Questioning</i></li> <li>- <i>Feedback</i></li> <li>- <i>Observation</i></li> <li>- <i>Conferencing</i></li> <li>- <i>Work analysis</i></li> </ul>	<p><i>Self and peer assessment</i></p> <p><i>Feedback</i></p> <p>Student performance while completing on-line activities e.g Study Ladder, Maths is Fun. Providing immediate scores in an interactive game setting.</p>	<p>Students brainstorm and record what they know about fractions (they can draw, write, use symbols etc)</p> <p>Brainstorm where they might use fractions in their lives.</p> <p>Students discuss their findings and through discussion, expand their understandings. Students explain processes used.</p> <p>Strategies used in tasks e.g comparing fractions with different denominator</p>

### KEY

Content Descriptions are in plain font

**Achievement Standards: Bold font**

Numeracy Learning Continuum Description. Underlined font

WHAT DO WE WANT STUDENTS TO LEARN?	WHAT WILL WE DO TO GET THERE?			HOW WILL WE KNOW IF THEY'VE LEARNT IT?
Mathematical Skills and Concepts	Sequenced Learning Activities	Language Elements	Resources	Evidence and Differentiation
<p><b>Reception – Yr 2 revision.</b> Revise/establish that fractions are equal parts of a whole</p>	<p><b><u>1.Revise what a fraction is.</u></b> Uses 'think pair share' to have students explore their existing knowledge about the definition of a fraction. Ask the groups to share their definitions with the class. Collate their definitions and relate it to the accurate definition – A fraction is an equal part of a whole</p> <p><b><u>1.1 Check students' understanding of equal part/whole</u></b> <b>Check students' understanding of 'whole' in relation to shape, object, collection and measure.</b> Set up four stations. Students rotate through them during the lesson. Students must complete all stations.</p> <p><b>Station 1- Shapes</b> An A3 piece of paper which has a range of regular and irregular shapes on it, some of which have been divided into unequal parts. Students put stickers labelled 'FRACTION-EQUAL PARTS' on the shapes that they think meet the definition of a fraction.</p> <p><b>Station 2- Objects</b> A basket of everyday 3D objects where a texta_or tape has been used to mark parts, some of which have been divided into equal parts, some of which have been divided into unequal parts. Students put stickers, labelled 'FRACTION-EQUAL PARTS' on the objects that they think meet the definition of a fraction.</p>	<p><b>Technical language</b> <i>part/whole</i> <i>equal/unequal</i> <i>numerator</i> <i>denominator</i></p> <p><b>Processes-</b> verb 'to be' in questions and statements and negations. <i>eg Is it equal?</i> <i>It is unequal?</i> <i>It is not a fraction.</i></p> <p><b>Subject verb agreement-</b> are/is <i>e.g The parts are not equal. This part is smaller.</i></p> <p><b>Technical Language</b> <i>shape, object, collection, measure</i></p> <p><b>Comparative Language</b> <i>This part is smaller than....</i> <i>This collection has less than...</i></p>	<p>Sticky labels with the words- FRACTION-EQUAL PARTS</p> <p>Pictures of regular and irregular shapes, divided into equal/unequal parts.</p> <p>3D objects divided into equal/unequal parts</p>	<p><input type="checkbox"/> I can recognise fractions</p> <p>If NO, then(return to development of fraction concept (Year 3: Model and represent unit fractions)</p> <p>If YES, then_students draw/construct / arrange shapes</p>

**Station 3- Collections**

An A3 piece of paper with collections on it, some of which have been divided into equal parts, some of which have been divided into unequal parts. Students put stickers, labelled 'FRACTION-EQUAL PARTS' on the objects that they think meet the definition of a fraction.

**Station 4- Measures**

Have a photo of the school oval, the basketball court, a cup, a jug which have had parts marked on them with a texta (some equal/unequal). Students put stickers, labelled 'FRACTION-EQUAL PARTS' on the objects that they think meet the definition of a fraction.

**1.3 Check students' understanding of pattern for naming fractions.**

Relate ordinal numbers to fraction name.  
Do students see a pattern? (pg 154 Booker, Teaching Primary Maths)

NUMBER OF EQUAL SIZED PARTS	9 PARTS	8 PARTS	7 PARTS	.....	4 PARTS	3 PARTS	2 PARTS
Ordinal names	ninth	eighth	seventh	....	fourth	third	second
Fraction names	ninth	eighth	seventh	....	fourth	third	half

Examine the anomalies, two parts = halves, also thirds and fourths or quarters  
Pair activity: Student A rolls 1-100 die. Student B says the number name if it represented a denominator fraction e.g 53= fifty thirds

**Multi word verb group**  
*One whole (circle, block, box of paperclips, basketball court) **has been divided** into equal parts*

**Complex sentences**  
*This is a fraction because....  
This is not a fraction because....*

**Definitions**  
Place various student definitions on a register continuum from informal to formal

**Technical vocab:**  
Ordinal numbers (regular and irregular )and fraction names

**Simple sentence**  
*A whole divided into 53 parts has 53 fifty thirds.*

**Spelling:** suffixes

Pictures of collections divided into equal/unequal parts

Pictures/photos/ map of the school oval, basketball court, cup, jug with equal/unequal parts marked on them.

Chart that relates ordinal names, fraction names and number of parts

1-100 dice

/objects /collections for partner to determine if the whole has been divided equally.

### 1.4 Check students' understanding of size fractions

(the more parts a whole is divided into, the smaller the part).

Play the "Would you rather" game to help students develop the generalisation that the more equal parts you have, the "smaller" (quantity or size) the part will be.



The teacher poses a question, "Would you rather have half a cake or a sixth of a cake?" Students then answer and justify their response.

### 1.5 Revisit the way we represent a fraction

Revise 3 ways of representing fractions

- Visually
- Numerically
- Number name

Students match all 3 representations using a proforma provided in appendix 1

Illustrate using a shape 	Illustrate using a collection 
Write in words Three quarters	STORY I invited 24 friends to my birthday party. $\frac{3}{4}$ of them were girls. How many girls came to my birthday?
<b>3</b> <b>4</b>	

See blank worksheet in appendix 1

### Word Order in questions and answers

'Would you ...rather have/prefer? ...'

I would rather have/prefer

cut out cards with 3 representations of up to 10 fractions

Concept map (include diagram to show quadrants visual, numeral, symbol, story)

dice

I can compare and order common unit fractions

I can explain the relationship between number of parts and the size or quantity of the parts.

If NO, then use a rectangular region to develop an understanding that a number of parts increase the relative size decreases.

If YES, then rehearse the language choices to describe the relationship.

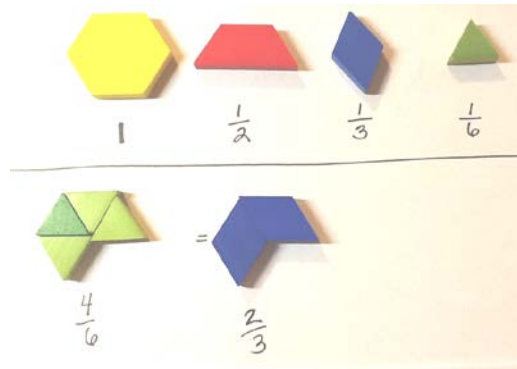
Eg *The more pieces, the smaller the fraction. Or the bigger the denominator the smaller 1 part.*

I can represent a fraction as a visual, as a numeral and as a number name.

**1.6 Revisit the concept of a unit fraction**


Roll die, the numeral indicated becomes the unit fraction.  
Show your fraction with each of the following materials  
(e.g roll a 6 and show  $\frac{1}{6}$  of the whole)

- shape/region
- collection e.g paper clips
- measure e.g water
- object e.g pattern blocks



Students take a photo of their representations



<p><b>E</b> Recognise common equivalent fractions in familiar contexts</p> <p><b>E</b> Investigate equivalent fractions used in contexts</p> <p><b>E/F</b> Visualise, describe and order equivalent fractions</p>	<p><b><u>2.1 Build their understanding of the relationship between part and whole</u></b></p> <p>Provide pairs of students with a fraction kit that has unnamed parts. (wooden/plastic/material/paper) The students choose the largest part and label it as the whole. They then need to use post it notes to label all the other pieces. Then they repeat the task choosing the second biggest piece as the whole.</p> <p><b><u>2.2 Introduce the idea of equivalent fractions</u></b></p> <p><b>Activity 1</b> Using the materials provided in 2.1, students are introduced to the term equivalence meaning “same as” Model using the fraction kit. Eg: Birthday cake fraction kit where the child has already labelled each piece. Take the whole, ask the students how many halves they would need to make the whole. Place the pieces on top as you ask the question. Model recording. <math>1 = \frac{1}{2} + \frac{1}{2}</math> <math>1 = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}</math> Place the pieces on top as you record. Then take another piece eg <math>\frac{1}{2}</math> What other pieces will have equivalence with a half? Lay them on top to check. Ask students to explore equivalence for themselves. Challenge them to find at least six different equivalences and to record them.</p> <p>At the conclusion of the lesson, have students share the equivalences they have found and then the teacher enters them onto a whole class equivalence grid.</p>	<p><b>Processes</b> <i>choose, label</i></p> <p><b>Superlative adjectives</b> <i>-largest/smallest/biggest</i> <i>-first biggest/second biggest</i></p> <p><b>Technical vocabulary</b> <i>same as=equivalent</i></p> <p><b>Subject/Verb Agreement</b> <i>There are four quarters in a whole</i></p>	<p>Fraction kit with unnamed parts</p> <p>post it notes</p> <p>Fraction kit e.g birthday cake fraction kit with unnamed parts</p> <p>Cuisenaire Rods</p>	<p><input type="checkbox"/> I understand that fraction size is relative to the size of the whole</p> <p>If NO, then provide students with more visual examples</p>  <p>One-half can be smaller than one-third.</p> <p>If YES, then students come up with their own examples to illustrate fraction size is relative to the size of the whole</p>
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**Activity 2**

Revise the word 'equivalent'

Students are provided with a rectangle showing fifths and colour 3 parts to show  $\frac{3}{5}$ .

Students fold the rectangle in two, lengthwise. Now the rectangle shows  $\frac{6}{10}$ .

Fold rectangle lengthwise in 3 to show  $\frac{9}{15}$ .

(Students should be able to see the area shaded has not changed at all so all the fractions show the same amount)

Teacher records on the board  $\frac{3}{5} = \frac{6}{10} = \frac{9}{15}$

Students are given a square shape with parts marked.

They repeat the task working in pairs.

**Activity 3**

a) Using a fraction wall, students are asked to label the parts on the wall and then find and express at least six equivalences.

e.g  $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10}$

or

$\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12}$

At the conclusion of the lesson, students share the equivalences they have found which the teacher enters onto the whole class equivalence grid begun in Activity 1.

b) Give students a fraction wall that has been cut up into individual pieces and ask them to reconstruct the wall.

**Activity 4**

Give students a blank number line from 0-2 on a strip of frieze tape.

**Processes**

*fold, compare, find, record, share, reconstruct, order*

**Sentence Structure**

Dependent clauses  
*Two thirds, which is equal to four sixths, is greater than one half.*

Different fraction kit (e.g rectangular)

A class set of paper rectangles showing fifths

A class set of paper squares showing fifths

Fraction wall for each student

Number line

I recognise common equivalent fractions.

If YES students try it with another set of materials (eg: rectangular fraction kit/ Cuisenaire rods)

If NO, students stay with the teacher to explore a few more examples.

Give students a selection of fractions expressed symbolically ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ,  $\frac{3}{8}$ ,  $\frac{5}{8}$ ) and some whole numbers and mixed numbers up to 2. Students are asked to order the fractions, whole number and mixed numbers on the number line. Ask students to find six examples of equivalence.

Students add to the equivalences they have found in activity 1 and 3a.

**Activity 5**

Teacher uses the Class Equivalence Chart from Activity 1a. Ask students

- Do you notice any patterns in the changes to the numerator and denominator in equivalent fractions?

Look at numerators first e.g 2, 4, 6, 8. Discuss the pattern and write it as a generalisation. "Our theory is that..."

Apply the same process for denominator 4,6,8,10

Place students in pairs and ask them to test the class generalisation. After ten minutes, report to the class whether they believe the generalisation is true.

Summarise your agreed class generalisation.

**Activity 6**

Students are given an equation with one of the numbers missing e.g  $5/3 = x/6$  or  $2/3 = 6/x$  Students work in pairs and put the class generalisation into action to solve the unknown.

**Prepositions**  
*between, before, after*

**Technical Vocabulary**  
*number line*

**Processes**  
*test, check, multiply*

**Technical Vocabulary**  
*theory, rule*

**Sentence Structure:**  
relative clause: *that, when, if*  
(for writing a generalisation e.g *Our theory is that...*  
*When nominators are the same.....*

Cut out strips of fraction wall for each student

blank number line on a strip of frieze tape

Class equivalence chart

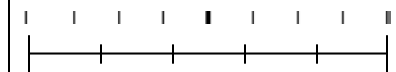
I can identify equivalent fractions.

If NO, students stay with the teacher to explore a few more examples using different materials.

If YES, then, find equivalent fractions in area models, such as geoboards, dot paper, pattern blocks, circular pie pieces and collections.

I can locate fractions on a number line.

If NO then provide students with a few marked number lines.



If YES, then students add more common fractions on a number line.

I can compare fractions on a number line.

**F** Solve problems using equivalent fractions

Students are given fractions e.g  $\frac{4}{6}$ ,  $\frac{2}{3}$  and are asked to apply the generalisation (eg: multiplying numerator and denominator by the same number) to find an equivalent fraction.

2. Use the fraction wall to help you write the equivalent fraction.

(a) $\frac{1}{3} = \frac{\square}{6}$	(b) $\frac{3}{4} = \frac{\square}{8}$	(c) $\frac{4}{10} = \frac{\square}{5}$
(d) $\frac{3}{5} = \frac{\square}{10}$	(e) $\frac{1}{2} = \frac{\square}{6}$	(f) $\frac{4}{6} = \frac{\square}{3}$
(g) $\frac{2}{8} = \frac{\square}{4}$	(h) $\frac{3}{3} = \frac{\square}{2}$	(i) $\frac{4}{8} = \frac{\square}{2}$
(j) $\frac{4}{5} = \frac{\square}{10}$	(k) $\frac{2}{4} = \frac{\square}{2}$	(l) $\frac{2}{4} = \frac{\square}{8}$

Clare Way Fractions & decimals p.59

**Activity 7**

Students work in pairs to develop a solution for each of the following situations. They choose one of the situations to report back to the whole group about.

- a) Charlie ate  $\frac{2}{3}$  of a chocolate bar. Harry's chocolate was the same size but it was divided into 6 pieces. How much does Harry have to eat to eat the same amount as Charlie?
- b) Dad filled  $\frac{1}{3}$  of the bath with water. Mum came along and filled another  $\frac{2}{6}$  with water. Who filled the bath with more water?
- c) Mum measured how tall her twins were. One was  $\frac{3}{4}$  of a metre and the other was  $\frac{7}{8}$  of a metre? Who was taller?

If NO, then return to length models, not area models as a central representational tool of fractions (De Walle p313-4)

If YES, then write a few fractions including equivalent pairs for a partner to place on a blank number line e.g



- I can solve problems using equivalent fractions
  - less than a whole
  - greater than a whole

If YES then, use language models in existing word problems and create own situation

E Count by quarters, halves and thirds including mixed numerals

Locate and represent fractions on a number line

### 3.1 Count by halves

#### Activity 1

Teacher demonstrates by using 3 circles cut into halves.

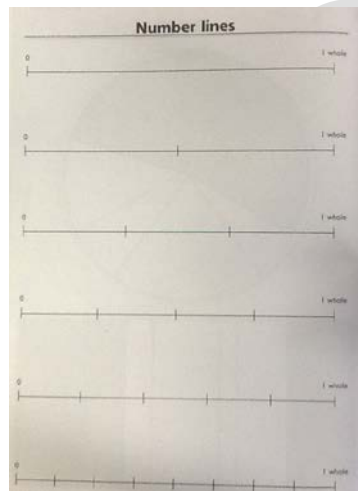
Teacher counts  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , 2,  $2\frac{1}{2}$ , 3

Teacher points out that once we count over one whole the fraction becomes a mixed number.

Students work in pairs to count with the Fraction Bags.

#### Activity 2

Teacher introduces the Number Line Fraction Sheet  
Students work in pairs to label each marker on the number line. They then count orally on the number line. Each student takes a turn to listen to their partner count and gives them feedback on their counting skills.



See Appendix 2

Technical vocabulary  
*improper, proper, mixed number, integer*

Resource: Fraction Bags - Sandwich bags each with 10 circle or rectangle shapes cut into halves or quarters or eighths or sixths or tenths

Resource – Number Line Fraction sheet  
A4 piece of paper which has at least five number lines with the 0-5 marked on them, and then mark lines for either halves, thirds, sixths, eighths, tenths.

(De Walle p313-4)  
Worksheet/cards with mixed and improper fractions

□ I can count using mixed numbers.

If YES, then students record themselves counting shapes from fraction bags  
e.g  $\frac{1}{3}$ ,  $\frac{2}{3}$ , 1,  $1\frac{1}{3}$ ,  $1\frac{2}{3}$ , 2

Then teacher asks questions, such as the following  
-How many  $\frac{1}{3}$  to get to 3?  
-How many  $\frac{1}{5}$  to get to 5?  
-How many  $\frac{1}{4}$  to get to  $4\frac{1}{2}$ ?  
I can compare fractions on a number line.

If YES students solve the following problem  
6 friends are racing. The fractions tell how much of a distance they have already run. Place these friends on a line to show where they are between the start and finish?  
Mary –  $\frac{3}{4}$  Tom –  $\frac{1}{2}$  Abdul-  $\frac{5}{6}$   
Han –  $\frac{5}{8}$  Miguel –  $\frac{5}{9}$  Anna –  $\frac{2}{3}$   
(page 314 De Walle Activity 15.2 'Who is Winning')

**F Explain the relationship between a mixed number and an improper fraction**

**Activity 3**

Iteration Activity from page 320 in De Walle to move from 2 thirds, 3 thirds, 4 thirds:

Provide students with a strip of paper and tell them that it is  $\frac{3}{4}$  of a whole. Ask them to find  $\frac{1}{2}$ ,  $1\frac{1}{2}$ ,  $2\frac{1}{4}$ , 3 and so on.

To find this, students should partition the piece into 3 sections to find  $\frac{1}{4}$  and then iterate the  $\frac{1}{4}$  to find the fractions listed.

**4.1 Mixed numbers/ Improper fractions**

**Activity 1**

Teacher revises the term mixed number and introduces the terms improper fraction by displaying some examples of each and asking students to identify which are which.

Students then given a sheet/cards with examples of both on them – they need to sort them out into the two groups.

**Activity 2**

Students work in pairs with a small whiteboard between them. One student writes either a mixed number or an improper fraction. The other student has to provide the alternate expression.

They then reverse roles.

e.g One student write  $1\frac{1}{2}$ . The other student then writes  $5\frac{1}{2}$

**Activity 3**

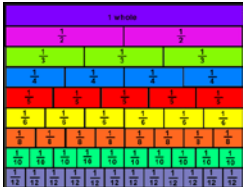
Students work in pairs to develop a solution for each of the following situations. They need to choose one of the situations to report back to the whole group about.

a) If a class ate 24 half apples, how many whole apples did they eat?

Whiteboards and markers

Play the "between" game. Play as a whole group first and then in pairs.

Teacher says a mixed number eg:  $4\frac{2}{3}$ , and asks between which two integers students would find this fraction.

	<p>b) If a teacher brought 10 apples cut in half to share for recess, how many students will she share it with?</p> <p><b>4.2 Count by other fractions</b>          Students practice with teacher counting by various fractions by the following game.          Equipment- unifix blocks and dice          Students roll dice- the number it lands on determines how many parts make a whole. Each time the class counts by fractions until they reach 3 wholes.          e.g If dice lands on 3, we need 3 unifix blocks to make a whole so we will count by thirds in the following way 1/3, 2/3, 1, 1 1/3, 1 2/3, 2, 2 1/3, 2 2/3, 3.          While whole class counts, teacher adds unifix cubes to represent the fractions.</p>	<p><b>Sentence Structure</b>          Dependent clause using <b>if</b>  <i>How many apples did a class eat, if they ate 24 half apples?</i></p>	<p>Unifix blocks and dice</p>	
<p><b>F Compare fractions</b></p>	<p><b>5.1 Compare and order fractions with the same denominator</b>          Teacher poses question          There are 15 students in our class. The teacher has to divide the students into 2 groups. Represent each group as a fraction. Which fraction/group is bigger? (7/15 or 8/15) What do you notice about the size of fractions with the same denominator?          Students practice using other examples          Order the following sets of fractions from smallest to largest e.g 4/6, 1/6, 2/6</p> <p><b>5.2 Compare and order fractions with a different denominator</b></p> <p><b>Activity 1</b>          Provide visuals of 3 circles. 1 divided into 5 parts, 1 divided into 3 parts and 1 divided into 8 parts.          Shade 1 part each.          Together with students identify the fractions for each of them.</p>		<p>Sets of fractions to order</p> <p>3 circles on paper          -1 divided into 5 parts -          -1 divided into 3 parts          -1 divided into 8 parts</p>	<p>If NO, then students use fraction wall to help them decide/check their answer</p>  <p>If YES, then students are asked to explain their reasoning with area model e.g circles and on a number line.</p>



Order from smallest to largest. What do you notice?  
(Revisit the generalisation that the larger the denominator, the smaller the fraction)

### Activity 2

Word Problem- Sarah ate  $\frac{2}{5}$  of a pizza, Kim ate  $\frac{2}{3}$  and John ate  $\frac{2}{4}$ .

Who ate the most? Who ate the least? Who ate half?

### 5.3 Compare fractions based on less than a half and more than a half reasoning

### Activity 1

Revise half e.g what is half of a whole divided into

- a) 8 pieces
- b) 6 pieces
- c) 10 pieces

### Activity 2

Circle the bigger number. Meet with a partner and justify your solution. e.g

- d)  $\frac{3}{4}$ ,  $\frac{7}{8}$
- e)  $\frac{4}{6}$ ,  $\frac{2}{4}$
- f)  $\frac{4}{7}$ ,  $\frac{3}{8}$

### 5.4 Summative tasks

Which fraction in each pair is greater? Give reasons for your choice. Do not use drawings or models.

- a)  $\frac{4}{5}$  or  $\frac{4}{9}$
- b)  $\frac{4}{7}$  or  $\frac{5}{7}$
- c)  $\frac{3}{5}$  or  $\frac{3}{7}$
- d)  $\frac{4}{8}$  or  $\frac{6}{10}$
- e)  $\frac{5}{10}$  or  $\frac{3}{8}$

Page 331 De Walle example of justification

- a.  $\frac{4}{5}$  is only one away from being a whole.  $\frac{4}{9}$  is closer to  $\frac{1}{2}$
- b.  $\frac{5}{7}$  is greater than  $\frac{4}{7}$  because  $\frac{5}{7}$  is closer to a whole.

### Sentence Structure

Paired constructions with verb *to be* omitted.

*The larger the denominator, (is), the smaller the fraction (is)*

Explore other constructions eg *The smaller the pizza, the less we all eat.*

### Processes

*justify, explain*



<p><b>F Add and subtract fractions with the same denominator</b></p>	<p><b><u>6.1 Add fractions using visuals</u></b></p> <p>Using the “birthday cake” fraction kit/wooden or plastic fraction kits, students identify the largest piece as the whole and then label each piece (revisit activity 1 in 2.1) Then they are asked to find at least five different ways to make a whole.  eg: <math>\frac{1}{2} + \frac{1}{2}</math>  <math>\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}</math>  <math>\frac{2}{4} + \frac{2}{4}</math></p> <p>Ask students to work in pairs to make a list of three things they notice about what happens when you add fractions that have the same denominator.  What would your class generalisation be?</p> <p><b><u>6.2 Add fractions symbolically</u></b></p> <p><b>Activity 1</b>  Revisit your class generalisation about adding fractions with the same denominator.  Work in pairs to test out your generalisation. Report back to the whole group on what you find.</p> <p><b>Activity 2</b>  Students work in pairs to record 15 fraction addition sentences. They then swap with another pair and calculate the answers.</p> <p><b><u>6.3 Subtract fractions</u></b></p> <p><b>Activity 1</b>  Revise our generalisation for adding fractions with the same denominator. “Remember in mathematics if you know one thing you always know something else”  Based on our addition generalisation how do you think  Students work in pairs to develop a generalisation for subtraction.</p>		<p>Birthday cake fraction kit with unnamed parts</p>	
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Share them back as a group.  
Decide on your class generalisation.

**Activity 2**  
Students work in pairs to record 15 fraction subtraction sentences and apply the class subtraction generalisation. They then swap with another pair and calculate the answers

**Activity 3**  
Students work in pairs to develop a solution for each of the following situations. They need to choose one of the situations to report back to the whole group about.

- a) If we walked  $\frac{3}{4}$  of the whole way to school, how far does he have left to go?
- b) Jane ate  $\frac{4}{8}$  of a cake and her sister ate  $\frac{3}{8}$ . How much did they eat together? How much cake is left?
- c) A birthday cake was cut into tenths. Students ate  $\frac{7}{10}$ . How much cake is left?
- d) A painter painted  $\frac{2}{6}$  of a wall. How much does he have left to paint?

# Overview of language and examples used in the teaching, learning and assessing program

A summary of the language mostly pertaining to this substrand as used in the following teaching, learning and assessing program.

Oral Texts	Visual Texts and Symbols	Text Knowledge	Grammar Knowledge	Word Knowledge
<p><b>Spoken Texts</b> Participation in oral texts to explore understandings about our number system and place value</p> <p><b>Verbal elements</b> Pronunciation of ordinal numbers</p> <p><b>Speech functions</b> Appropriate use of and response to statements, questions and commands</p> <p><b>Social exchanges</b> Explaining strategies in small group settings/whole class</p> <p>Reflecting on strategies used</p>	<p><b>Visuals in Multimodal texts</b></p> <p><b>Symbolism</b> Symbols to represent fractions +, -, &lt;, &gt;, =</p> <p><b>Semiotics</b> Fraction wall Number line</p>	<p><b>Written texts:</b> Explanation- Students explain strategies and reasoning for their choices</p> <p>Recounts for word problems</p> <p><b>Reference items</b> It, they, this, these</p>	<p><b>Simple sentences</b> <i>A whole divided into 53 parts has 53 fifty thirds.</i></p> <p><b>Complex sentences</b> <i>This is a fraction because....</i> <i>This is not a fraction because....</i></p> <p><b>Word Order</b> in questions, statements and negations. E.g <i>Is it equal?</i> (question) <i>It is unequal</i> (statement) <i>It is not a fraction</i> (negations)</p> <p><b>Paired constructions</b> with verb <i>to be</i> omitted. <i>The larger the denominator, (is), the smaller the fraction (is)</i></p> <p><b>Multi word verb group</b> <i>has been divided</i></p> <p><b>Subject Verb Agreement</b> <i>are/is e.g The parts are not equal. This part is smaller.</i></p> <p><b>Prepositions</b> <i>between, before, after</i></p> <p><b>Comparative Language</b> <i>This collection has less than...</i> <i>-first biggest/second biggest</i></p>	<p><b>Topic Vocabulary</b> <i>fraction names, integer part, whole, mixed number, numerator, denominator, equivalent, number line, shape object, collection, measure, improper, proper, mixed, equal, unequal, ordinal numbers (regular and irregular)</i></p>

## Appendix

<b>Top 5</b>		
	Learning Goal	Evidence of Learning
	I can recognise and find common equivalent fractions.	
	I can solve problems using equivalent fractions.	
	I can locate and represent fractions on a number line.	
	I can change mixed number to an improper fraction and vice versa.	
	I can compare and order fractions.	
Student Comment:		
Teacher Comment:		