

Booragul Public School NSW Syllabus for the Australian Curriculum – Number and Algebra

Stage 2 – Fractions and Decimals 2

Outcome	Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date
<p>Stage 2 A student:</p> <ul style="list-style-type: none"> › uses appropriate terminology to describe, and symbols to represent, mathematical ideas MA2-1WM › checks the accuracy of a statement and explains the reasoning used MA2-3WM › represents, models and compares commonly used fractions and decimals MA2-7NA 	<p>Language</p> <p>Students should be able to communicate using the following language: whole, part, equal parts, half, quarter, eighth, third, sixth, fifth, tenth, hundredth, one-sixth, one-tenth, one hundredth, fraction, numerator, denominator, whole number, number line, is equal to, equivalent fractions, decimal, decimal point, digit, place value, round to, decimal places, dollars, cents.</p> <p>The decimal 1.12 is read as 'one point one two' and not 'one point twelve'. Refer also to language in Fractions and Decimals 1.</p>		
<p><u>Ignition Activity</u></p> <p>Skip counting Skip counting by $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$ and hundredths using a number line ensuring we extend beyond one.</p>			
<p>Fraction wall using 1/5s and 1/10s. In groups, students are given two lengths of different coloured streamers that are each 100 centimetres long. Students use measurement to cut one of the streamers into one tenths and the other streamer into one fifths. They build a fraction wall that is 40 cm long (and will be 5 streamers high) by combining different lengths of streamers. Students discuss the different combinations that made the 40 cm. Did they use all of the same fraction in a row or could they have changed the composition of the wall?</p>			
<p>Match Up The teacher provides two sets of cards, the first with tenths expressed in fraction notation, and the second with tenths expressed in decimal notation. The teacher distributes the cards randomly to the students who then find the student/students with the same fraction represented. Possible questions include: how many of the same fractions/decimals did you find? how can you check if there are any more? is there another way to write that fraction/decimal? <i>Variations:</i> This activity should be repeated using cards with hundredths and a mixture of tenths and hundredths.</p>			
<p>Make 10 Provide students with scoring sheets and the teacher require one die, 1-6 or 0-9. 1. The aim is to score ten or as close to it as possible without “busting” (going past ten). 2. The teacher rolls the die and announces the number. The students may choose to divide the</p>		<p>~ 1 ~</p>	

number by ten or score it at face value, e.g. 2 may be scored as 2 or 0.2.
 3. The die is rolled again and the process repeated and the score recorded by the student at face value or one tenth of the face value. The student then records the progressive total in the adjacent column.
 4. This continues until nine rolls have been completed. Note: All rolls must be used.
 5. The student who scores ten or the number closest (but below) ten wins.
 Extension: Adapt the activity to 'Make One'

Counting On program pg 197-199

Straw javelin

Place masking tape on the floor to indicate a starting point. Organise the students into a line behind the starting point. Have the students take turns to throw a straw as far as they can. The students then estimate and measure the distance the straw travelled.

Straw javelin

Name	Estimate	Actual measurement
Elif	2.43	2.50
Simone	1.11	1.09

Write a report comparing the estimate to the actual measurement for your throw, as well as comparing the two throws.
These estimates are quite close to the actual measurement. We used a one metre ruler to get the correct measurement. If we didn't use a ruler to measure it would be incorrect.

(Adapted from pp 228-229 Developing Efficient Numeracy Strategies Stage 1 DENS 1)

Explicit Mathematical Teaching

In Stage 2 Fractions and Decimals 2, fractions with denominators of 2, 3, 4, 5, 6, 8, 10 and 100 are studied. Denominators of 2, 3, 4, 5 and 8 were introduced in Stage 2 Fractions and Decimals 1. Fractions are used in different ways: to describe equal parts of a whole; to describe equal parts of a collection of objects; to denote numbers (eg is midway between 0 and 1 on the number line); and as operators related to division (eg dividing a number in half). Money is an application of decimals to two decimal places. Refer also to background information in Fractions and Decimals 1.

Investigate equivalent fractions used in contexts (ACMNA077)
 • model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100
 • model, compare and represent the equivalence of fractions with related denominators by redividing the whole, using concrete materials, diagrams and number lines, eg

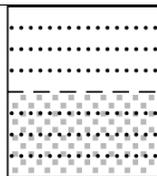
Critical and creative thinking
 Literacy
 Information and communication
 technology capability



$$\frac{1}{2}$$



$$\frac{2}{4}$$



$$\frac{4}{8}$$

$$\frac{3}{5} = \frac{6}{10}$$

• record equivalent fractions using diagrams and numerals, eg

Recognise that the place value system can be extended to tenths and hundredths, and make connections between fractions and decimal notation (ACMNA079)

• recognise and apply decimal notation to express whole numbers, tenths and hundredths as decimals, eg 0.1 is the same as 1/10

▮ investigate equivalences using various methods, eg use a number line or a calculator to show that 1/2 is the same as 0.5 and 5/10 (Communicating, Reasoning)

▮ identify and interpret the everyday use of fractions and decimals, such as those in advertisements (Communicating, Problem Solving)

• state the place value of digits in decimal numbers of up to two decimal places

• use place value to partition decimals of up to two decimal places, eg

$$5.37 = 5 + \frac{3}{10} + \frac{7}{100}$$

• partition decimals of up to two decimal places in non-standard forms, eg

$$5.37 = 5 + \frac{37}{100}$$

apply knowledge of hundredths to represent amounts of money in decimal form, eg five dollars and 35 cents is , which is the same as \$5.35 (Communicating)

• model, compare and represent decimals of up to two decimal places

▮ apply knowledge of decimals to record measurements, eg 123 cm = 1.23 m (Communicating)

▮ interpret zero digit(s) at the end of a decimal, eg 0.70 has the same value as 0.7,

3.00 and 3.0 have the same value as 3 (Communicating)

▮ recognise that amounts of money are written with two decimal places, eg \$4.30 is not written as \$4.3 (Communicating)

▮ use one of the symbols for dollars (\$) and cents (c) correctly when expressing amounts of money, ie \$5.67 and 567c are correct, but \$5.67c is not (Communicating)

▮ use a calculator to create patterns involving decimal numbers, eg $1 \div 10$, $2 \div 10$, $3 \div 10$ (Communicating)

• place decimals of up to two decimal places on a number line, eg place 0.5, 0.25 and 0.75

on a number line

- round a number with one or two decimal places to the nearest whole number

Essential ideas for the teaching of length, mass, volume and capacity and decimals are all covered within the mathematics syllabus. Decimals have a natural teaching context in the measurement strand because of the metric system. Measurement is a better more natural introduction to decimals than money. When dealing with length, you can see that 100 centimetres make 1 metre, and 45 cm or 0.45 m, is less than half a metre. With money, there are no visual clues from the coins that 45 cents is a fraction of a dollar. In stage 2, students learn to apply decimal knowledge to record measurements; they are expected to be able to record 123 cm as 1.23 m, recognising that there are 100 cm in a metre.

Explain there are two ways to write fractions ie, $\frac{1}{10}$ and 0.1. Introduce the term “decimal fraction” and explain that this how we write fractions in decimal form.

Decimals are a short hand way of writing fractions. The decimal point indicates where whole numbers end and fractions begin.

Explain that $\frac{3}{10}$ is the same as 0.3 ie, both are three tenths.

Show students what a decimal looks like and explain to them the role of the decimal point. ie numbers after the decimal points are tenths or hundredths [part of the whole], numbers before the decimal point are whole numbers. Instruct students that decimals are a type of fraction and that in a decimal number place value indicates the number of equal parts.

Write $\frac{6}{10}$ and $\frac{36}{100}$ on the board. Explain that in these fractions the denominator is a power of 10 and so these fractions can be written as a decimal fraction. Next to each fraction write the correct decimal (0.6 and 0.36).

$\frac{6}{10}$.6
$\frac{36}{100}$.36
$\frac{366}{1000}$.366

Explain that a decimal point is used and the number of digits after the point tells us if the fraction is tenths or hundredths. Point to the decimal and read aloud 6 tenths and 36 hundredths.

Explain that one digit after the decimal point tells how many tenths and two digits after the decimal point tells how many hundredths.

.08	.80	.8	.3	.03	.30
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The teacher writes examples on the board such as:

Including examples which use the same digit and zero in different positions makes the student focus on the number of digits after the decimal point.

.08 .80 .8

[..\\..\\..\\Mathematics\Maths Dictionary for Kids\MDWORDS\decimal.swf](http://...\\Mathematics\Maths Dictionary for Kids\MDWORDS\decimal.swf)

Ask students to suggest real-life examples of where decimals are used, eg money, lengths, time, capacity (1.5L of Coke), weights
Explain how to write decimals up to two-decimal places.
Explain that adding/subtracting decimal fractions is exactly the same process as for whole numbers.
Provide examples and show that the decimal point must move straight down. Emphasise the importance of correct placement and use of the algorithm so as not to change place value.

Whole Class Teaching Activities

Lamingtons

Lamingtons are pieces of sponge cake covered in chocolate icing and dipped in shredded coconut. Giving explicit instruction, distribute rectangular sheets of brown paper. Show by folding the piece of paper how you could make 4 lamington bars. Ask the students to fold their own piece of paper into 4. Check to see which way they have divided their paper. If they use different methods to form quarters ask them if each person would still get the same.
Fold piece of paper into 8 smaller lamington bars. If I wanted to eat this much (show three quarters) how many of the smaller (1/8) lamington bars would this be equal to? Get them to discuss and explain the answer.

Fractions- Pikelets and Lamingtons pg 37

Variation: this can be done with denominators of 3, 6, 10

A Pikelet Recipe

Students use sharing diagrams to operate on continuous models of fractions
In this activity students explore dividing wholes into equal parts and use sharing diagrams to divide by fractions.
1. Place 4 identical empty cylindrical clear plastic tumblers near each other on a table (Have your students fill the tumblers to the desired amount if possible)
Say "***I want to pour half a glass of drink. Who can show me where about on the glass I would need to fill it to?***" Provide the student with a thin piece of masking tape to record his or her answer. A marking pen could also be used. "***Who thinks that this is the place we should fill the tumbler to get half a glass?***" Allow an opportunity for class discussion and if the student wishes, he or she can move the tape. "***How can we know if we are right?***"
2. Put out another transparent tumbler with vertical sides. "***Can you show me where I would have to fill this glass to get one-quarter of a glass?***" Attach a small piece of thin black tape at the indicated location. "***Does this look correct?***" Adjust as directed.
Draw a sketch of the tumbler on the board. Ask one student to add a line to your diagram on the board to show one-quarter of a glass.

<p><i>I have 6 cups of milk. A recipe needs $\frac{1}{2}$ of a cup of milk. How many times can I make the recipe before I run out of milk? Can you draw your answer?</i></p> <p><i>I have 6 cups of milk. A recipe needs one quarter ($\frac{1}{4}$) of a cup of milk. How many times can I make the recipe before I run out of milk? Can you draw your answer</i></p> <p>Fractions, Pikelets and Lamingtons pg 32-34</p>		
<p>Number Line Fractions Disribute fraction cards with a denominator of fifth and tenths or thirds and sixth. Discuss where to place the peg cards on a string number line in the appropriate place and explain their reason why. Extend the activity with placing the other cards. Students should be able to record compare the equivalent fractions with related denominators.</p>		
<p>Fruit Salad Strategies- What strategies could we use to find $\frac{1}{2}$ of 24? $12+12=24$. What strategies can we use to find a $\frac{1}{4}$ of 24? 24 and half again. Repeat this for $\frac{1}{8}$? Students move about in an open space in a group of 24. The teacher asks the group to divide into halves, quarters or eighths. Any remaining students check the groupings. The activity should be repeated using groups of different sizes.</p> <p>Note: When there are more than 24 students they are responsible for helping the groups.</p>		
<p>Comparing and Ordering Model different ways to represent the same fraction as a whole class on the board. Students are provided with four sets of cards representing the same fractions. The first set has the fractions represented in fraction notation, the second set has the fractions represented in words, the third set has the fractions represented as shaded regions and the fourth set has the fractions represented as the shaded part of a collection. The cards are randomly distributed to students who must find other students with the same fraction represented. Students then place the sets of fraction cards in order.</p>		
<p>Counters As a whole class demonstrate <u>equivalent</u> fractions using 16 counters, Pose the questions Can I find $\frac{1}{2}$ of of 16 ($\frac{8}{16}$) of 8 ($\frac{4}{8}$) of 4 ($\frac{2}{4}$) Repeat this for $\frac{1}{4}$</p> <p>Discuss the relationship between $\frac{2}{4}$ and $\frac{1}{2}$.</p>		
<p>Is It Possible? Students are given 16 counters and need to determine whether it is possible to find , or .eg I can find $\frac{1}{2}$ of 16 (8) $\frac{1}{4}$ of 16 (4) $\frac{1}{8}$ of 16 (2).</p>		

Students record their findings. The activity should be repeated using different numbers of counters and extended to include fractions with denominators of 5, 10 and 100.

Clothes Line Fractions

Distribute fraction cards eg $1/5$, $2/5$, $3/5$, $4/5$, $5/5$, $1/10$, $2/10$, $3/10$ etc and place cards for 0 and 1. Discuss where to place $1/5$, $1/10$ and have students peg cards on a string number line in the appropriate place and explain their reason why.

Ask students how they would write a fraction that represents hundredths. Write the fractions $1/100$, $3/100$, $45/100$... $99/100$ and $100/100$. Repeat the clothes line activity to include hundredths. Pose the question: if $5/5$ is one whole, how can $100/100$ also be one whole?

Give students a 10x10 grid and ask one group to colour in one vertical strip of ten, one group to colour in one horizontal strip of ten and one group to colour in ten squares randomly in the grid. Discuss what fractions have been coloured in. Why are these all the same? Explain that the fractions are the same because they all contain ten out of the hundred units. Since there are one hundred parts, each unit is called one hundredth of the whole grid. The students coloured in ten hundredths of the grid. Discuss what other fraction this might be. Do they know that ten hundredths is the same as one-tenth? Explain that ten hundredths is one tenth, twenty hundredths is two tenths etc.

Give students a grid the same size as previously with 10 vertical columns drawn. Ask them to colour in one vertical column - do they see that this is the same as the ten single units from the 10x10 grid?

Mathematics Programming Support website Fraction Cards-see attached sheets

Comparisons of Fifths

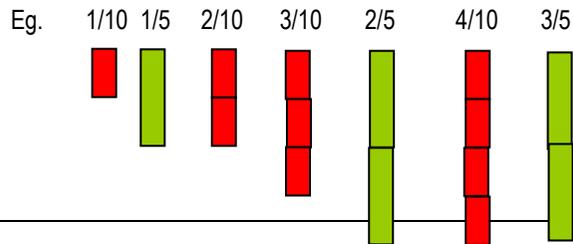
Ask students: When is one fifth not one fifth?

Answer: When it is one fifth of different wholes!

Eg. One fifth of a strip of paper is not the same size as one fifth of an apple. It is the proportion of the whole that is important not the comparison between different wholes. This is important as students will be using different sized 'wholes' to look at fractions.

Ask students to make additional lengths of $2/5$ and $3/5$ from a third piece of streamer 60cm and use one piece of $1/5$. From the initiating activity, use the tenths pieces to join them into $2/10$, $3/10$, $4/10$ (or make these separately).

Place pieces ($1/5$, $2/5$, $3/5$, $1/10$, $2/10$, $3/10$, $4/10$) into ascending order (vertically) and notice which pieces are the same.





Ask questions relating to the pieces, such as: "Is $\frac{3}{10}$ bigger than $\frac{1}{5}$?", "is $\frac{3}{5}$ smaller than $\frac{4}{10}$?" etc.

Now ask students to become more abstract by asking questions such as "is the fraction $\frac{4}{5}$ bigger than or smaller than $\frac{5}{10}$? Why?" "Can you give me a fraction that is bigger than $\frac{3}{5}$? And another? And another?"

Ask students how they know that the fractions are bigger.

Clothes Line

Part A

The teacher provides cards each naming a different fraction with the same denominator. Students choose a card and peg it on a string number line in the appropriate place.

Part B

The teacher provides cards, each naming a different decimal to 2 decimal places. Students choose a card and peg it on a string number line in the appropriate place.

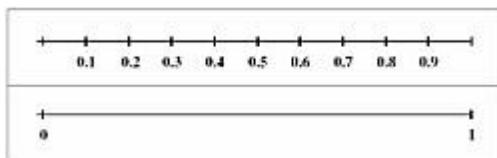
Variation: Students make their own cards and arrange them on their desk or a sheet of paper.

Decimal number line

Attach an unmarked one metre strip of cardboard to a wall. Inform students that it is one metre long. Ask selected students to mark where they think 0.5 m would be. Place students initials near their mark. Ask other students to place a mark for 0.25 m with their initials. Record 0.5 m and 0.25 m under each other on the board. Have two students check the measurements. Ask questions such as: How did you know where to place 0.5 m? 0.25 m? Continue the lesson and the discussion with 0.75m and continue with 0.2m and 0.3m.

Double number line

The double number line is used to extend understanding of the placement of numbers on a number line. Each double scale is photocopied onto cardboard, cut out and folded along the middle line. A paper clip is used to estimate the position of a nominated number and the scale is flipped over to check the estimation. The activity can be an individual, paired or group activity. The side without the additional intervals is displayed and the paper clip used to indicate the nominated position on the scale. Once the estimation is made it can be checked on the other side with the paper clip acting as a dial for both sides. Discussion of strategies will enable students to improve their understanding and estimations.



Counting On pg 60-64

(refer to attached sheets for number lines)

Where's that number?

This activity builds on from decimal clothesline and double number line. Students place numbers on the number line.



Counting On program pg 205-208

Decimal sorting

Prepare one set of decimal cards for each pair of students. In pairs, students sort cards into three groups: Near 0, About $\frac{1}{2}$ and near 1. Students should explain why they have placed the cards in particular groups.

0.1	0.53	0.90
0.51	0.2	0.48
0.89	0.55	0.95
0.09	0.12	1.06
Near 0	Near $\frac{1}{2}$	Near 1

Counting On program pg 203-204

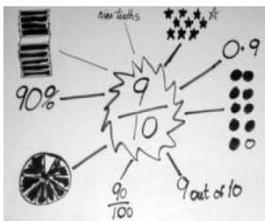
Two Decimal Places Game

The teacher makes a die writing a decimal (between 0 and 1) to two places on each face. Students use a 10×10 grid as a score sheet. Students take turns to throw the die and colour the appropriate section on their grid. The winner is the first player to colour their 10×10 grid completely.

Variation: Students can make their own dice labelling them using common fractions, decimals or a combination of fractions and decimals.

Extension: Students record the decimal thrown and add decimals together after each throw. Students colour each throw differently.

<p>Adding and Subtracting Decimals In pairs, students are provided with a pack of playing cards with the tens and picture cards removed. The Aces are retained and represent 1 and the Jokers are retained and represent 0. Student A flips two cards and places them together to form a decimal to two decimal places. Student B flips two cards and places them together to form a decimal to two decimal places. Student A copies down the decimals and uses a written algorithm to find their sum. Student B checks Student A's answer. Students swap roles and the activity is repeated. <i>Variation:</i> The activity is repeated to involve subtraction of decimals to two decimal places.</p>		
<p>Biggest or Smallest The teacher places cards with the digits 0 to 9 into a bag. In pairs, students randomly select two cards from the bag. Students use the digits to make a decimal number less than 1 eg if 5 and 2 are selected the students record 0.25. Students use the two digits to make a new decimal ie 0.52. Possible questions include:</p> <ul style="list-style-type: none"> • which decimal is larger? • how do you know? • how can you show this? <p>The number cards are replaced and the activity repeated. Students record the decimal numbers on a number line.</p>		
<p><u>Guided Group and Independent Activities</u></p>		
<p>Circular Fractions Students draw a circle on paper and imagine that it is the top view of a cake. They use pencils or popsticks to show where they would cut the cake to have two/ four/eight equal slices.</p>		
<p>Cover Up Students use a collection of objects eg counters, blocks, pegs. One student selects a number of objects and covers up half/quarter/eighth of the objects with their hand or piece of cardboard. Their partner is then asked: <i>How many counters are under my hand?</i> <i>How many counters are there altogether?</i></p>		
<p>Investigations The answer is $\frac{1}{2}$. What might the question be? Give at least 10 examples. Is one eighth smaller or larger than one quarter? Explain your answer with examples</p>		
<p>Fractions Poster Students choose a fraction and create a poster, writing everything they know about that fraction. Students report back to the group their findings about their fraction.</p>		



Double Number Line-Fractions (halves, fifths and tenths)

Each double number line is photocopied onto cardboard, cut out and folded along the middle line. A paper clip is used to estimate the position of a nominated fraction and the number line is flipped over to check the estimation. The activity can be an individual, paired or group activity. The side without the additional intervals is displayed and the paper clip used to indicate the nominated position on the scale. Once the estimation is made it can be checked on the other side with the paper clip acting as a marker for both sides. Discussion of strategies will enable students to improve their understanding and estimation.

Colour the Fraction(halves, quarters, fifths ,eighths and tenths)

Each student takes it in turns to roll the die and colour in the equivalent fraction on the gameboard. Record each roll of the die throughout the game.

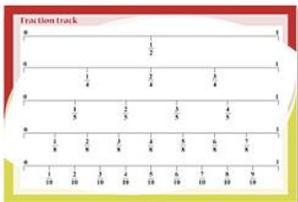
- Each row in the gameboard is equal to one whole.
- The first student to colour the entire gameboard is the winner.
- At the completion of the game, add the fractions recorded below, to ensure they equal to at least five.



Programming mathematics support

Fraction Track 2-

A gameboard task that replicates the computer task.



Programming mathematics support

<p>Fraction Card Games Students work in groups of three or four with fraction cards playing games like Old Maid, Concentration (Memory) or Fish</p>								
<p>Brainstorm In groups, students need to brainstorm fractions with fifths, tenths and hundredths that are the same size. They make comparisons between the different fractions. They choose five fractions that they place on a number line in order.</p>								
<p>Digit card game Provide students with a set of numeral cards 0-9 and a place value board each. Before the game begins players decide if the biggest or smallest number wins. Shuffle the digit cards and turn them face down. Each player in turn draws a numeral card and places it on their place value chart in any column.</p> <div style="text-align: center;"> <p>Digit card game</p> <table style="margin: auto;"> <tr> <td style="text-align: center;">Ones</td> <td style="text-align: center;">Tenths</td> <td style="text-align: center;">Hundredths</td> </tr> <tr> <td style="text-align: center;">□</td> <td style="text-align: center;">□</td> <td style="text-align: center;">□</td> </tr> </table> </div>	Ones	Tenths	Hundredths	□	□	□		
Ones	Tenths	Hundredths						
□	□	□						
<p>Shhh! It's a secret! Organise the students into pairs and provide each pair with a basic calculator. The first student enters a number onto the calculator without his or her partner seeing the number. It may be advisable to begin with a two-digit number. After entering the number the student then needs to press the following keys: Press ÷ Press ÷ Press = Keep pressing = until a "0" is displayed. The first student then hands the calculator to his or her partner who tries to guess the original number and enters it into the calculator. He or she then presses = and a decimal notation will be displayed. If this decimal notation is greater than "1", then the guessed number was greater than the secret number. If the decimal is less than "1", then the guessed number was less than the secret number. When the secret number is guessed correctly and entered, then a "1" will be displayed.</p> <p><i>Developing Efficient Numeracy Strategies Stage 2) pp. 292-293</i></p>								
<p>Generating decimal number sequences on a calculator Students use the constant function on a calculator to generate decimal number sequences. For example, by repeatedly adding 0.2, students generate the sequence 0.2, 0.4, 0.6, 0.8, 1, 1.2, 1.4 and so on. They give the sequence a title, and look for patterns. Ask students if it is similar to any other sequences with which they are familiar. They note its similarity to the sequence of multiples of two. Ask students to</p>								

predict what the sequence generated by repeatedly adding 0.3 will be.

Decimal jigsaw

Display the 0 to 1 chart and discuss patterns when moving down, up or diagonally around the chart. Distribute the jigsaws, explaining that the students are expected to reassemble the pieces to form the grid.

	0.3				0.9
1.1			1.6		2.0
			2.7		
	3.4			3.8	
4.1			4.6		5.0
	5.2		5.5		5.9
	6.3			6.8	
			7.5	7.7	
	8.2	8.4			
9.1		9.5			9.9

Talking about Patterns and Algebra pg 90

Card Games

Provide students with blank cards to create a set of four cards representing hundredths, using different names eg 4 hundredths, $\frac{4}{100}$, 0.04, 4 out of one hundred. Students, in groups, then make their own packs of 48 cards.

1. Students can sort the cards into three groups: near 0, about $\frac{1}{2}$, near 1. Students justify why they have placed cards in groups.
2. Students can order cards into order by size
3. Students can play memory, or card games such as Fish, Old Maid.



Money

apply knowledge of hundredths to represent amounts of money in decimal form, eg five dollars and 35 cents is $5 \frac{35}{100}$, which is the same as \$5.35 (Communicating).

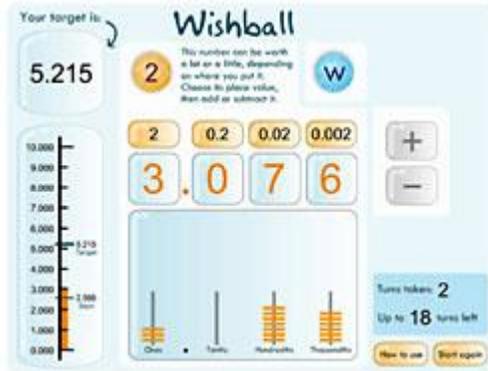
- recognise that amounts of money are written with two decimal places, eg \$4.30 is not written as \$4.3
- use one of the symbols for dollars (\$) and cents (c) correctly when expressing amounts of money, ie \$5.67 and 567c are correct, but \$5.67c is not

Computer Learning Objects

Wishball

The wishball series of learning objects encourages thinking about place value. It also provides opportunities for mental addition and subtraction. Students try to reach a target number by adding or subtracting in fewer than 20 moves. The spinner randomly serves up a digit. Before students add or subtract they first choose a place value to assign to the digit. So, if 2 is the digit served up, students can make it 2.0, 0.2, 0.02 or 0.002.

Click [here](#) to access Wishball

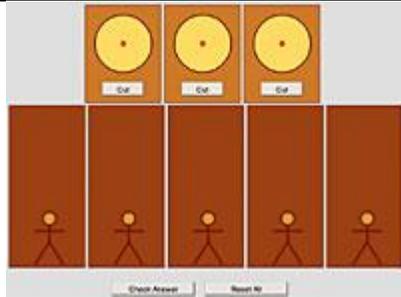


Fraction Track

The object of the activity is to move all the red sliders across the track in the smallest number of moves. The students click on the playing card to identify the fraction and move one slider by the amount on the card, or move more than one slider as long as it equals and doesn't exceed the value of the fraction.

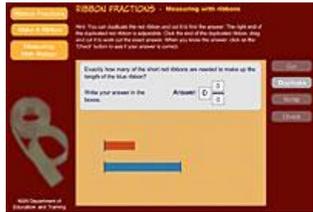


Pikelet Cutter-Sharing whole pikelets among different numbers of people.



Ribbon Fractions

The RIBBON FRACTIONS is an interactive tool that can be used in strengthening students' sense of the size of fractions



Previous BST/ NAPLAN Questions

NAPLAN 2008-Yr 3

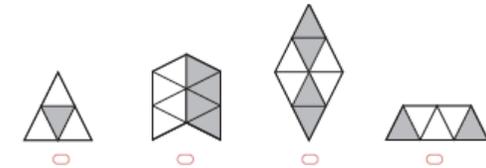
16 Cassie cut all these oranges into quarters.



How many quarters does she have altogether?

- 4 5 10 20

23 These four shapes are made from triangles that are all the same size.



Shade one bubble.

35 What fraction of the rectangle is shaded?

$\frac{1}{4}$ $\frac{1}{2}$
 $\frac{3}{8}$ $\frac{3}{4}$

Reflection

Questioning Ideas

Ask questions and encourage students to justify (explain) their answer such as:
How many digits after the decimal point?
How many hundredths?
How do we know the eight is in the hundredths place?
How does the position of the digits change the value of the decimal? Why?
What pattern do you notice?
 Support incorrect answers by explaining the error and talking through their thinking using the think aloud strategy.
 If a student says .03 is 3 tenths ask:
How many digits after the decimal point? (Point and count) 2 places
So what does the .03 tell us? — Hundredths
 Check that students are using the correct pronunciation by saying the 'ths' on the end (**tenths** and **hundredths**) as this will avoid confusion when mixed numbers are introduced.

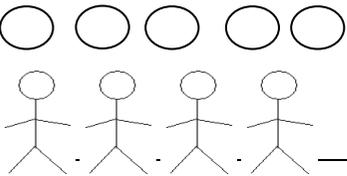
Planned assessment

Pre Assessment

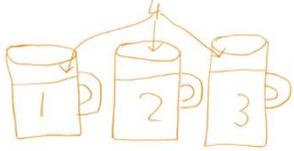
Using 8 connected unifix cubes can you split it into halves, quarters and eighths.
 How many different ways can you show the fraction $\frac{xx}{xx}$?
 This assessment allows the students to show their understanding of fractions in a variety of ways.

Pikelet sharing problem

How would we share 5 pikelets between 4 people? Can you draw your answer?



Draw what will happen if I have 6 cups of milk and a recipe needs three-quarters ($\frac{3}{4}$) of a cup of milk.
How many times can I make the recipe before I run out of milk?



Decimal number line

Students place these numbers on a number line: 0.1, 1. Ask students to place five other numbers on their number line and explain how they placed the numbers

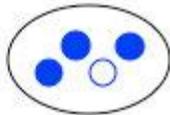
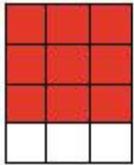
Liquorice strap(refer to attached sheet)

Linking fractions and decimals

Students choose a fraction and write and draw everything they know about the fraction.

$$\frac{3}{4} = \frac{9}{12} = 75\% = 0.75$$

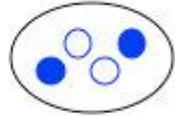
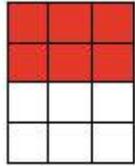
$$= \frac{6}{8} = \frac{75}{100}$$



Linking decimals and fractions

Students choose a decimal and write and draw everything they know about the decimal.

$$0.5 = \frac{1}{2} = \frac{50}{100} = 50\% = \frac{2}{4}$$



Which is larger?

Which is larger: 0.75 or 0.8? Give examples to explain your answer.(refer to attached sheet)

Present students with a mixture of percentages, fractions and decimals to place into equivalent piles.
(see attached)

Students complete their own table of related fractions, decimals and percentages.

Present students with different fractions with denominators of 5, 10 and 100 and ask them to place them on an empty number line in order. Make sure that some of the fractions are equivalent ie $4/10$, $2/5$, $40/100$.

Ask students to write everything they can about the fraction $4/10$.

They need to write a word problem that results in an answer of $4/10$

What fractions can you see?

Download the assessment proforma

Flags

Students design rectangular flags according to certain features.

Download the assessment proforma