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

Fractions and Decimals 1			
Outcome	**Teaching and Learning Activities**	**Notes/ Future Directions/Evaluation**	**Language / Date**
A student: › describes mathematical situations and methods using everyday and some mathematical language, actions, materials, diagrams and symbols MA1-1WM › represents and models halves, quarters and eighths MA1-7NA			whole, part, equal parts, half, halves, **about a half**, **more than a half**, **less than a half**.
<u>**Activities**</u>			
Find Half of a Collection - Game Students are given a die with faces numbered 2, 4, 6, 8, 10, 12. In small groups or pairs, students take turns to roll the die. They collect counters to match half the amount rolled and record their roll and the counters taken eg 10 is rolled and the student collects 5 counters. Students have a predetermined number of rolls eg 20. The winner is the student who has the most counters. Variation: The numbers on the die could be any even number.			
Drawing Halves Students are shown half of a regular shape and are then asked to find, draw and describe the other half. **Drawing Quarters** Students are shown half of a regular shape and are then asked to find, draw and describe the other quarters			
Explicit Mathematical Teaching			

At this Stage, fractions are used in two different ways: – to describe equal parts of a whole, and – to describe equal parts of a collection of objects. Fractions refer to the relationship of the equal parts to the whole unit. When using collections to model fractions it is important that students appreciate the collection as being a 'whole' and the resulting groups as 'parts of that whole'. It should be noted that the size of the resulting fraction will depend on the size of the original whole or collection of objects. It is not necessary for students to distinguish between the roles of the numerator and denominator at this Stage. They may use the symbol ' ½ ' as an entity to mean 'one-half' or 'a half' and similarly for '1/4' Be careful of introducing traditional fraction symbols too early as many students have not developed a meaning for the symbols before they are asked to operate with them. Sharing diagrams provide a good method of representing and calculating with fractions. Not only are they more closely linked to the nature of fractions arising from division than the traditional symbolic notation, they frequently provide access to the images students hold of fractions. Sharing diagrams are offered to a student as representational tools. Representational tools are forms of symbolising that support thinking.		
Sharing the Whole Part A In pairs students share a slice of bread so that each person gets the same amount of bread with none left over. Students discuss and record their strategies. **Part B** The teacher demonstrates cutting a piece of fruit into two or four pieces. Students: ❚ count the pieces ❚ describe how the pieces are alike ❚ describe the pieces as 'halves' or 'quarters'. In small groups, students attempt to cut paper shapes into two or four equal parts. They discuss whether the parts are equal and share the pieces. **Halve/Quarter the Paper** Students discuss the two important things about creating halves/quarters ❚ creating two/four parts ❚ checking whether they are the same size. **Using a paper square, students discuss:**		**Mathematics K-6 Sample Units of Work pg 53** Bread **Fractions: Pikelets and lamingtons** p.11 – 31 **Mathematics K-6 Sample**

▌ how they would cut it into halves/quarters ▌ how they would check if the two/four parts are equal ▌ whether there is more than one way they could do it. Students cut a variety of paper shapes into halves/quarters, describe the parts and compare their responses with others.		**Units of Work pg 53** Paper Squares
Halve/Quarter Different Objects Students investigate a variety of objects eg length of string, ball of plasticine, fruit, cup of water, muesli bar and symmetrical pictures. They discuss: ▌ how they would divide each object into halves/quarters ▌ how they would check if the two/four parts are equal. Students manipulate each object, attempt to divide them into two/four equal parts, check the size of the halves/quarters and describe the parts. Students reflect on whether their method of checking that the halves/quarters were equal was different for each of the objects eg checking the two halves of a length of string compared to checking the two halves of a ball of plasticine.		**Mathematics K-6 Sample Units of work pg 53** Variety of Objects
Sharing Collections **Halves** The teacher displays eight cubes and says 'I am going to share these eight cubes between two people.' Two students are selected to hold out their hands for the teacher to share the cubes, one at a time. Possible questions include: ▌ did each student get an equal amount? ▌ how many cubes did each student get? The teacher says 'We have shared the eight cubes into two equal amounts. Each is one-half of eight.' Quarters The activity is repeated using the scenario 'I am going to share the eight cubes among four people.' Students predict how many each student will receive and four students are selected to hold out their hands for the teacher to share the cubes. The teacher says 'We have shared the eight cubes into four equal amounts. Each is one-quarter of eight.'		

Possible questions include: ▌ why did each student get less this time? ▌ how could you check if the two/four parts are equal?		
Pikelets Sharing How would we share 2 pikelets between 2 people? 5 pikelets between 4 people? Draw and explain your answer. Students use paper circles to model the process of sharing pikelets and record their answer using a sharing diagram. *If we wanted to share 4 pikelets people, how could we do it?* *What would we do if we had 5 pikelets to share between 2 people?* Students can use the learning object pikelet sharing problems. *2½ each* *between 2* *Can you draw your answer?* 'Pikelet cutter' *to solve*		
Are They Halves/Quarters? Students are shown a collection of shapes eg circles. The collection should include some that show two equal parts and some that show two unequal parts. Eg Possible questions include: ▌ do these circles show two equal parts? ▌ how do you know? The activity should be repeated for quarters.		
How Many in Each Half? Students are given a paper square to represent a farm. They are asked to fold the paper in half to create two equal-sized paddocks. Eg Students are given a collection of animal counters and are asked to count out ten for their farm. They put the animals on the farm so there are an equal number of		**Mathematics K-6 Sample Units of Work pg 54** Paper squares
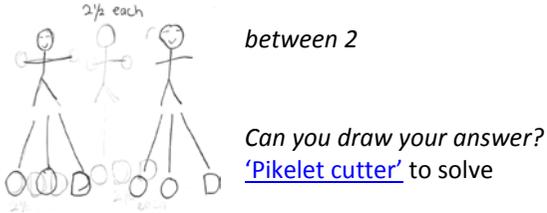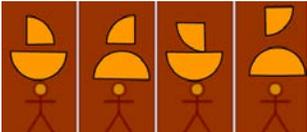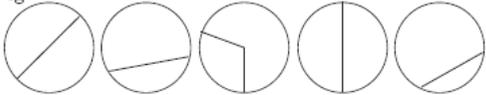
animals in each paddock. Possible questions include: ❚ how many animals do you think will be in each paddock? ❚ could you have worked out the number of animals in each paddock without sharing them out one-by-one? Students share and discuss their strategies and solutions. Variation: This activity could be varied by: ❚ changing the number of animals on the farm ❚ creating four equal-sized paddocks ❚ using a different context eg flowers in a garden, chocolate chips on a biscuit, candles on a cake, peas on a plate.		Counters
Estimating Halves In pairs or small groups, students are provided with a collection of small similar objects in containers eg centicubes, counters, beads. They empty the contents and create two groups of objects that they estimate will be about half of the collection. Possible questions include: ❚ what strategies did you use to help with your estimation? ❚ what could you do to improve your estimation? ❚ how did you check your results? The activity should be repeated using different objects. Extension: Students estimate and create four groups that are about equal using similar objects and strategies. 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/three/four equal slices. Students use a collection of objects eg counters, blocks, pegs. One student selects a number of objects and covers up quarter of the objects with their hand. Their partner is then asked: How many counters are under my hand? How many counters are there altogether? The activity can be extended showing two, three quarters or a third.		Mathematics K-6 Sample Units of Work pg 53 Collection of objects e.g counters, beads, centicubes, buttons etc