

LEVEL: Year 6	CONTENT: Number & Algebra	FOCUS: Pattern
In the Classroom		
PURPOSE	<ul style="list-style-type: none"> <li>Find a fraction of a quantity</li> <li>Use fractions to represent information</li> <li>Represent and recognise equivalent fractions</li> <li>Use knowledge of fractions to find a total</li> <li>Identify, continue and create simple number patterns involving fractions</li> <li>Solve word problems that involve fractions</li> <li>Show the strategy used to solve the problem</li> <li>Explain the strategy used to find a possible solution</li> <li>Check the solution to a problem using a model, visual method or calculations</li> </ul>	
INTRODUCTION	Brief introduction to Good Mathematicians – make a list and place on the board, include teamwork, asking questions, sharing ideas, recording ideas, explaining thinking, persistence, checking solutions, working systematically, learning from mistakes and believing in yourself	
WARM UP	<p><b>Sharing Chocolate</b></p> <p>There's a room in your school that has three tables in it with plenty of space for chairs to go around. Table 1 has one block of chocolate on it, table 2 has two blocks of chocolate on it and, guess what, table 3 has three blocks of chocolate on it. Now ... outside the room is a class of children. Ten of them all lined up ready to go in and eat the chocolate. These children are allowed to come in one at a time and can enter when the person in front of them has sat down. When a child enters the room they ask them self this question: <b><i>"If the chocolate on the table I sit at is to be shared out equally when I sit down, which would be the best table to sit at?"</i></b></p> <p>Choose 10 students to run through the activity, no discussion. Discuss results. Run the activity a second time, this time students are allow to help each other to suggest which place is the best to sit.</p>	
EXPLICIT TEACHING & LEARNING	<p><b>Eating Peaches</b></p> <p>A little monkey had some peaches.          On the first day he decided to keep <math>\frac{1}{2}</math> of his peaches. He gave the rest away. Then he ate one.          On the second day he decided to keep <math>\frac{1}{2}</math> of his peaches. He gave the rest away. Then he ate one.          On the third day he decided to keep <math>\frac{1}{2}</math> of his peaches. He gave the rest away. Then he ate one.          On the fourth day he found he had only one peach left.          How many did he have at the beginning?</p>	
DISCUSSION/KEY QUESTIONS	<ul style="list-style-type: none"> <li>How can we represent this problem?</li> <li>How do we find a fraction of a collection?</li> <li>What is a good strategy when you enter the room?</li> <li>Is it always better to go the table with the least amount of people?</li> <li>Do you notice any patterns?</li> <li>What do we know about the monkey problem?</li> <li>What do we need to find out?</li> <li>How can we begin to find a possible solution?</li> <li>What would help us find a solution?</li> <li>How can you check that your solution is correct?</li> </ul>	
DELIBERATIVE PRACTICE	The focus of this activity to challenge students to unpack a rule and see if it is being used correctly. Often students will just learn a rule and blindly use it. This task gets students to stop and think and then make corrections to ensure the rule works in all cases (generalise).	
REFLECTION	Help students unpack what they have discovered and encourage students to share what strategies were effective and what things they needed to change. Also reflect as a class on students who were a Good Mathematician and why – have students nominate one another. Remind students of list created at the beginning of the lesson.	
RESOURCES	Paper and counters <b>NRICH problems</b> – Chocolate <a href="https://nrich.maths.org/34">https://nrich.maths.org/34</a> AND Peaches today, peaches tomorrow <a href="https://nrich.maths.org/2312">https://nrich.maths.org/2312</a>	

Curriculum Connections	
<b>CONTENT</b>	<p><b>VICTORIAN F-10 CURRICULUM – LEVEL 6</b>  <b>Fractions and Decimals</b>                      Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies (<a href="#">VCMNA213</a>)  <b>Elaborations:</b> recognise that finding one third of a quantity is the same as dividing by 3  <b>Patterns &amp; Algebra</b>                      Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence (<a href="#">VCMNA219</a>)  <b>Elaborations:</b> identifying and generalising number patterns</p>
<b>WHAT CAME BEFORE</b>	Students will be familiar with fractions but may find it more challenging to solve a problem that involves applying their knowledge of fractions. Students may rely on using or making a visual model in order to find possible solutions.
<b>WHAT COMES NEXT</b>	Students need to be encouraged to move beyond simply using a visual model and instead need to prove their thinking using symbols.
<b>VOCABULARY</b>	Analyse, systematic, fractions of quantities, multiplication, numerator, denominator, equation, equivalent, model, diagram, table, pattern
<b>MISCONCEPTIONS</b>	Some students when sharing the chocolate may initially go for the whole blocks, rather than thinking about the fractions of the blocks that are possible.
<b>WHAT PROFICIENCIES ARE TO BE UTILISED?</b>  Understanding Fluency Problem Solving Reasoning Communicating (NSW) Justifying (NSW)	<p><b>Year 6 (Australian Curriculum)</b>  <b>Understanding</b> includes describing properties of different sets of numbers, using fractions and decimals to describe probabilities, representing fractions and decimals in various ways and describing connections between them, and making reasonable estimations  <b>Fluency</b> includes representing integers on a number line, calculating simple percentages, using brackets appropriately, converting between fractions and decimals, using operations with fractions, decimals and percentages, measuring using metric units and interpreting timetables  <b>Problem-solving</b> includes formulating and solving authentic problems using fractions, decimals, percentages and measurements, interpreting secondary data displays and finding the size of unknown angles  <b>Reasoning</b> includes explaining mental strategies for performing calculations, describing results for continuing number sequences, explaining the transformation of one shape into another and explaining why the actual results of chance experiments may differ from expected results.</p>
<b>ASSESSMENT</b>	Reflect the strategies used by the students to find possible solutions to the problem – can students justify their thinking and support their explanation with evidence.