

Year 4		Western Adelaide Region - Maths Assessment Tasks Map (Draft –November 2013)						Proficiency Strands	
Aims		<p><b>The Australian Curriculum Mathematics aims to ensure that students</b> .....are confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations in their personal and work lives and as active citizens; develop an increasingly sophisticated understanding of mathematical concepts and fluency with processes, and are able to pose and solve problems and reason in <i>Number and Algebra, Measurement and Geometry, and Statistics and Probability</i>; recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study.</p>						<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Fluency</li> <li>• Problem Solving</li> <li>• Reasoning</li> </ul>	
Content Strands		Number & Algebra							
Sub Strands		Number & Place Value			Fractions and Decimals		Money and Financial Mathematics	Patterns & Algebra	
Big Idea / Concept/ Key Understanding		Place Value	Additive to Multiplicative Thinking	Partitioning					
<p>-All numbers ending with the digit 0, 2, 4, 6 or 8 are even and those ending in 1, 3, 5, 7 or 9 are odd</p> <p>-Numbers with more than 1 digit are also classified as odd or even</p>		<p>-Place value has a logical, repeating pattern that extends to the thousands and beyond</p> <p>-Numbers can be renamed in various ways (i.e. 254 can be renamed as 25 tens and 4 ones, or 254 ones)</p> <p>-In place value there are names for each new unit (multiples of 10) (i.e. tens, hundreds, thousands)</p>	<p>-It is important to work flexibly and efficiently with a range of numbers and explore generalisations (e.g. for 7 sixes - "I know that 5 sixes are 30 and 2 sixes are 12, therefore 7 sixes is 42")</p> <p>-Each operation has its appropriate use in solving a range of problems involving multiplication or division</p> <p>-Solutions to problems can be found and communicated in a variety of ways (e.g. using words, diagrams, tables, symbols, explanations)</p> <p>-Fluency with number facts is essential for developing and applying efficient mental strategies</p>	<p>-Developing the language of fractions is important (i.e. "I have <math>\frac{3}{4}</math> of 12 marbles. I have 9 marbles; it is quarter past 5)</p> <p>-The denominator of a fraction names the part. The numerator tells their number -- how many</p> <p>-A unit fraction is a fraction whose numerator is 1 (e.g. <math>\frac{1}{3}</math>: in <math>\frac{2}{3}</math> the unit is <math>\frac{1}{3}</math> and we have 2 of them)</p> <p>-Representations of quantities can be larger than 1 whole and this is called a mixed number</p> <p>-The decimal numeral system has 10 as the base. A decimal is a tenth part (e.g. 0.6 is 6 tenths of a part, the part being 1 whole)</p> <p>-A decimal fraction is a fraction whose denominator is a power of ten (e.g. 6 tenths, 6 hundredths, 6 thousandths, etc.)</p>		<p>-Currency has determined values and can be recognised according to appearance and value</p> <p>-Money values can be represented in a variety of combinations</p> <p>-Goods and services are paid for with cash, credit or bank cards and cheques</p> <p>-Each country has its own currency</p> <p>-Currency provides access to food and services</p>		<p>-A pattern requires an element of repetition that can be described and generalised with a pattern rule</p> <p>-Patterns can involve a combination of numbers, objects and symbols</p> <p>-Patterns are all around us</p> <p>-Patterns can involve using available information to find unknown quantities</p>	
Australian Curriculum Content Descriptor		<p>Recognise, represent and order numbers to at least tens of thousands</p> <p>Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems</p>	<p>Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9</p> <p>Recall multiplication facts up to <math>10 \times 10</math> and related division facts</p> <p>Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder</p>	<p>Investigate equivalent fractions used in contexts</p> <p>Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation</p>	<p>Count by quarters halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line</p>	<p>Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies</p>	<p>Explore and describe number patterns resulting from performing multiplication</p> <p>Solve word problems by using number sentences involving multiplication or division where there is no remainder</p>	<p>Use equivalent number sentences involving addition and subtraction to find unknown quantities</p>	
Achievement Standard		<p>Students use the properties of odd and even numbers</p>	<p>Students choose appropriate strategies for calculations involving multiplication and division</p> <p>Students recall multiplication facts to <math>10 \times 10</math> and related division facts</p>	<p>Students recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places</p>	<p>Students locate familiar fractions on a number line</p>	<p>Students solve simple purchasing problems</p>	<p>Students continue number sequences involving multiples of single digit numbers</p> <p>Students describe number patterns resulting from multiplication</p>	<p>Students identify unknown quantities in number sentences</p>	
Summative Assessment Task			<p><b>4.1</b> Buying Biscuits Arrays of 24</p>	<p><b>4.2</b> Fruit Salad</p>		<p><b>4.3</b> The Price is Right</p>	<p><b>4.4</b> Multiplication Patterns The Baker's Muffins</p>		

## 4.1 – Number & Place Value

Choose appropriate and efficient strategies for multiplication and division

Western Adelaide Region

Mathematics Performance Assessment Tasks (Updated: November 2013)

Year 4

### Big Idea(s)

-It is important to work flexibly and efficiently with a range of numbers and explore generalisations (e.g. for 7 sixes - "I know that 5 sixes are 30 and 2 sixes are 12, therefore 7 sixes is 42").  
-Each operation has its appropriate use in solving a range of problems involving multiplication or division.  
-Solutions to problems can be found and communicated in a variety of ways (e.g. using words, diagrams, tables, symbols, explanations).

### Australian Curriculum Content Descriptor

Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9.  
Recall multiplication facts up to  $10 \times 10$  and related division facts.  
Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder.

### Achievement Standard

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. Students recall multiplication facts to  $10 \times 10$  and related division facts.

### Related Mathematical Proficiencies

- *Understanding* includes making connections between representations of numbers
- *Fluency* includes recalling multiplication tables
- *Problem Solving* includes formulating, modelling and recording authentic situations involving operations
- *Reasoning* includes using generalising from number properties and results of calculations, deriving strategies for unfamiliar multiplication and division tasks

<h3>Prior Learning Experiences</h3> <p>Do I use ongoing Formative Assessment to inform the teaching &amp; learning cycle? Do I provide learning experiences that enable students to build on their knowledge?</p>	<h3>Feedback</h3> <p>How will I provide feedback to students?</p>	<h3>Summative Assessment</h3> <p>Does the assessment task indicate <b>how well</b> students understand and can apply their learning? (<b>how well</b> = extent, depth and sophistication of thinking – informs A-E grading)</p>	<h3>Evidence</h3> <p>What evidence am I looking for that demonstrates the student has got it?</p>
<p><u><a href="#">It is important that students have had experiences with the learning opportunities below before administering the assessment task.</a></u></p> <p>Developing: <b>Understanding Fluency Problem Solving Reasoning</b></p> <p><u>Through experiences with:</u></p> <ul style="list-style-type: none"> <li>• Exploring multiplication patterns using a 100s chart</li> <li>• Explore arrays, including generalisations (e.g. "4 threes are 12, I know that 2 threes are 6 and double 6 is 12")</li> <li>• Identify arrays in the real world (e.g. Channel nine symbol, carton of eggs, muffin tin, computer icons)</li> <li>• Fact family relationships using arrays (e.g. 4 threes are 12, 3 fours are 12, 12 divided by 3 is 4, 12 divided by 4 is 3)</li> <li>• Problem solving involving the four operations and including making equal groups</li> <li>• Explore fair shares (e.g. money, counters, jellybeans)</li> <li>• Using a thinkboard for simple multiplication and division problems.</li> <li>• Arrays and regions games, such as Multiplication Toss (George Booker, Professor Dianne Siemon)</li> </ul>	<p>Teacher observations</p> <p>Conferences 1:1 with peers &amp; teacher</p> <p>Learning log: Student identifies areas for focus</p> <p>SNW (S- strengths, N – needing improvement, W- where to next)</p> <p>Stars/smiley faces</p>	<p><b>Task 1: Buying Biscuits</b></p> <p><b>Entry Level</b> Biscuits are sold in packets of 11 and 14. What packets of biscuits would I buy to serve 25 people if I wanted them to have 2 biscuits each?</p> <p><b>Challenge Level</b> The packet of 11 biscuits costs \$3.30. The packet of 14 biscuits costs \$3.50. How much altogether will it cost to buy the biscuits needed? How much would each biscuit cost?</p> <p><b>Task 2: Arrays of 24</b></p> <p><b>Entry Level</b> Use the thinkboard to record number facts for the number 24.</p> <p><b>Challenge Level</b> Write a real world multiplication problem for the number 24. Write a real world division problem for the number 24.</p> <p><b>Questioning</b> – "What strategies did you use?" "Is there another way to solve the problem?" "How did your knowledge of multiplication/number facts help you solve the problem?" "How might it help you solve a problem in the future?" "How did you calculate the total cost of the biscuits?"</p> <p><b>Organisation</b> <b>Teacher</b> – Record problem on board; have counters available if needed; attachment 4.1 enlarged onto A3 (option 2 only) <b>Students</b> – recording paper; whiteboards; attachment 4.1 (option 2 only)</p>	<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate</b> knowledge by using appropriate strategies for calculations involving multiplication and division. Students will recall multiplication facts to assist with problem solving.</li> <li>• <b>Show</b> understanding by applying multiplicative strategies to solve a word problem. Students use known strategies to identify the cost of a singular item. Students are able to write and record real world problems for multiplication and division.</li> </ul> <p><b>Advanced</b> –Students demonstrate an understanding of multiplicative strategies for problem solving. They calculate the total cost of the items and calculate a cost per single item. They may use estimation to assist their problem solving. They may recognise the relationship between 14 and \$3.50 (i.e. 7). They use their knowledge to write real world worded problems.</p> <p><b>Competent</b> –Students demonstrate an understanding of problem solving involving multiplication. They identify efficient strategies or use guess, check and review strategies when problem solving. They identify number facts for the number 24. They record their thinking.</p> <p><b>Developing</b> –Students demonstrate some/little understanding of problem solving involving multiplication. They attempt to solve the problem using additive strategies, pictures or materials to assist with solving the problem. They make an array of 24, however are unable to identify related number facts.</p>

## 4.2 – Fractions & Decimals

Model and represent unit fractions

Western Adelaide Region

Mathematics Performance Assessment Tasks (Updated: November 2013)

Year 4

### Big Idea(s)

- The denominator of a fraction names the part. The numerator tells their number (How many).
- A unit fraction is a fraction whose numerator is 1 (e.g.  $1/3$ : in  $2/3$  the unit is  $1/3$  and we have 2 of them).
- The decimal numeral system has 10 as the base. A decimal is a tenth part (e.g.  $0.6$  is 6 tenths of a part, the part being 1 whole).
- A decimal fraction is a fraction whose denominator is a power of ten (e.g. 6 tenths, 6 hundredths, etc.).

### Australian Curriculum Content Descriptor

Investigate equivalent fractions used in contexts. Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation.

### Achievement Standard

By the end of Year 4, students recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. They locate familiar fractions on a number line.

### Related Mathematical Proficiencies

- *Understanding* includes extending place value to decimals
- *Fluency* includes communicating sequences of simple fractions and decimals

<h3>Prior Learning Experiences</h3> <p>Do I use ongoing Formative Assessment to inform the teaching &amp; learning cycle? Do I provide learning experiences that enable students to build on their knowledge?</p>	<h3>Feedback</h3> <p>How will I provide feedback to students?</p>	<h3>Summative Assessment</h3> <p>Does the assessment task indicate <b>how well</b> students understand and can apply their learning? (<b>how well</b> = extent, depth and sophistication of thinking – informs A-E grading)</p>	<h3>Evidence</h3> <p>What evidence am I looking for that demonstrates the student has got it?</p>
<p><u><a href="#">It is important that students have had experiences with the learning opportunities below before administering the assessment task.</a></u></p> <p>Developing: <b>Understanding Fluency Problem Solving Reasoning</b></p> <p>Through experiences with:</p> <ul style="list-style-type: none"> <li>• Modelling and exploring halves, quarters, thirds, fifths</li> <li>• Locating common fractions and decimals on a number line</li> <li>• Counting by halves, thirds, quarters and fifths to complete a whole</li> <li>• Explore how fractions can be represented as decimal numbers and decimals represent as fractions</li> <li>• Partition areas and lengths to create common fractions (e.g. folding different sized paper to explore the number of parts in relation to the size of the part “a half is a half as long as it has 2 parts, no matter the size”)</li> <li>• Investigating equivalent fractions and related decimals to 2 decimal places</li> <li>• Problem solving with common fractions and decimals</li> <li>• Recognising the number of parts names the part (denominator) and the number of parts required tells us how many (numerator)</li> <li>• Exploring simple mixed numbers and related decimals</li> <li>• Fractions games (e.g. make a whole – Professor Dianne Simon)</li> <li>• Exploring fractions and decimals in real-world contexts – (e.g. fractions of a quantity, fraction of time, quarters in <math>2\frac{1}{2}</math> oranges, 250ml is quarters, etc.)</li> <li>• Exploring problem solving questions requiring whole amounts to be purchased (i.e. can you buy <math>2\frac{1}{2}</math> pizzas?)</li> <li>• ICTs- (e.g. New Zealand Decimat)</li> </ul>	<p>Teacher observations</p> <p>Conferences 1:1 with peers &amp; teacher</p> <p>Learning log: Student identifies areas for focus</p> <p>SNW (S- strengths, N – needing improvement, W- where to next)</p> <p>Stars/smiley faces</p>	<p><b>Fruit Salad</b> (attachment 4.2) (adapted from Qld studies authority, 2012)</p> <p><b>Entry Level</b> A fruit salad recipe serves 4 people. How much of each ingredient will you need to make a fruit salad for <b>8 people</b>?</p> <p><b>Fruit salad – serves 4 people</b></p> <ul style="list-style-type: none"> <li>• 2 oranges</li> <li>• <math>\frac{1}{2}</math> punnet strawberries</li> <li>• 0.5 kg apples</li> <li>• <math>\frac{1}{4}</math> pineapple</li> <li>• <math>\frac{2}{3}</math> banana</li> <li>• <math>1\frac{1}{2}</math> kiwifruit</li> <li>• 0.4 of a tub of yoghurt</li> </ul> <p><b>Challenge Level</b> In a recipe for 8 people, how could you represent each ingredient as a fraction on a number line? What if you were going to make the recipe for only 2 people? How much of each ingredient would you need?</p> <p><b>Questioning</b> – “How did you work out how much ... was needed?” “What strategies did you use?” “What did you find challenging? Easy?” “What prior knowledge helped you?” “How did you determine the placing of each ingredient on the number line?”</p> <p><b>Organisation</b> <b>Teacher</b> – copies of attachment 4.2; display the task on the board; fractions bars sheet for students to access; paper for recording <b>Students</b> – attachment 4.2; whiteboard; paper for recording</p>	<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate</b> knowledge by recognising common equivalent fractions and decimals in a familiar context.</li> <li>• <b>Show</b> understanding by solving fractions’ problems involving equivalent fractions, decimals and units of measurement and locating familiar fractions on a number line.</li> </ul> <p><b>Advanced</b> –Students demonstrate an understanding of equivalent fractions by accurately calculating ingredients required for various numbers of people. They explain their thinking using multiplicative strategies, identifying halving and doubling. They manipulate decimal fractions. They are able to correctly convert and order the fractions required on a number line. They may show both decimal and fraction representations.</p> <p><b>Competent</b> –Students demonstrate an understanding of equivalent fractions and decimals by calculating ingredients required when doubling a recipe. They may attempt to solve the challenge questions. They explain their solutions and record their strategies using mathematical reasoning.</p> <p><b>Developing</b> –Students demonstrate some/little understanding of equivalent fractions. They attempt to solve the problem identifying ingredients required for whole numbers and common fractions only.</p>

**Big Idea(s)**

- Currency has determined values and can be recognised according to appearance and value.
- The size of Australian coins and notes do not determine its value.
- Each country has its own currency.
- Currency provides access to food and services.

**Australian Curriculum Content Descriptor**  
Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies.

**Achievement Standard**  
By the end of Year 4, students solve simple purchasing problems.

**Related Mathematical Proficiencies**  
• *Problem Solving* includes formulating, modelling and recording authentic situations involving operations

**Prior Learning Experiences**

Do I use ongoing **Formative Assessment** to inform the teaching & learning cycle? Do I provide learning experiences that enable students to build on their knowledge?

**Feedback**

How will I provide feedback to students?

**Summative Assessment**

Does the assessment task indicate **how well** students understand and can apply their learning? (**how well** = extent, depth and sophistication of thinking – informs A-E grading)

**Evidence**

What evidence am I looking for that demonstrates the student has got it?

**It is important that students have had experiences with the learning opportunities below before administering the assessment task.**

Developing:

**Understanding Fluency Problem Solving Reasoning**

Through experiences with:

- Money mental routines – money combinations, buying items, giving change (e.g. using the Coin Mat software- Natural Maths, Ann & Johnny Baker)
- Exploring play money in formal and informal situations (e.g. playing shop)
- Exploring shopping lists, menus, shopping catalogues, receipts, etc.
- Identifying currency, including exploring currency from around the world
- Exploring multiple ways to make money combinations
- Exploring multiples of coins (e.g. “if I have ten 10 cent coins I have \$1.00)
- Games involving buying items and giving change
- Simple addition and subtraction of money amounts
- Place value involving decimals and decimal fractions
- Ordering items – cheapest to most expensive
- Rounding to the nearest 10 and 5 cents
- Estimating money amounts and total cost
- Running totals – adding on small money amounts
- Efficient strategies and generalisations for multiple coins (e.g. if I have five 5 cent coins – 4 fives are 20 and 1 more is 25; there are five 20cent coins in \$1.00, therefore there must be 10 in \$2.00 as double 5 is 10 and double \$1 is \$2)

Teacher observations

Conferences 1:1 with peers & teacher

Learning log: Student identifies areas for focus

SNW (S-strengths, N – needing improvement, W- where to next)

Stars/smiley faces

**The Price is Right** (see attachment 4.3)

**Entry Level**

Choose 5 different items in the shopping catalogue. Estimate the total cost of the items. Then calculate the actual total. Explain how you estimated your total cost. What is the difference between your estimated cost and the actual cost? What notes and coins would you use to purchase the items? What change would you receive?

**Challenge Level**

Your challenge is to spend as close to \$20.00 as you can, without going over. What will you buy?

**Questioning** – “What strategies did you use to estimate your total?” “How did you calculate the total cost?” “What strategies did you use to find the difference?” “What notes and coins would you use and why?” “What items might you buy for \$20.00?” “How did rounding and estimation assist with your calculations?”

**Organisation**

**Teacher** – mixed supermarket catalogues (ask students to also bring these in, but prepare this well ahead of time to ensure you have enough); copies of attachment 4.3 (enlarged to A3); play money for students choosing to use it

**Students** – attachment 4.3; scissors; glue; pencils

**Students will:**

- **Demonstrate** knowledge by solving a simple purchasing problem involving estimating total cost, finding the actual amount and calculating change.
- **Show** understanding by applying a range of logical strategies to solve a purchasing problem and explaining their choices.

**Advanced** –Students demonstrate an ability to estimate a total cost and an actual cost using logical and efficient strategies. They calculate the difference and identify appropriate notes and coins to purchase the chosen items. They choose items to challenge their thinking and they explain their strategies using mathematical reasoning.

**Competent** –Students demonstrate an understanding of estimating and calculating a total cost with accuracy. They identify a strategy for solving a purchasing problem. They attempt to find the difference. They identify their preferred notes and coins and calculate the change to be received. They explain their thinking using mathematical reasoning.

**Developing** –Students demonstrate some/little understanding of the problem. They identify items from a catalogue and attempt to estimate and find a total cost. They may record the notes and coins for purchasing and may attempt to calculate change required.

## 4.4 – Patterns & Algebra

Describe number patterns using multiples

## Western Adelaide Region

### Mathematics Performance Assessment Tasks (Updated: November 2013)

Year 4

<b>Big Idea(s)</b> -A pattern requires an element of repetition that can be described and generalised with a pattern rule. -Patterns can be represented in many ways, including using combinations of numbers, objects and symbols. -Patterns are all around us.	<b>Australian Curriculum Content Descriptor</b> Explore and describe number patterns resulting from performing multiplication. Solve word problems by using number sentences involving multiplication or division where there is no remainder.	<b>Achievement Standard</b> By the end of Year 4, students continue number sequences involving multiples of single digit numbers. They describe number patterns resulting from multiplication.	<b>Related Mathematical Proficiencies</b> • <i>Problem Solving</i> includes using properties of numbers to continue patterns
<p style="text-align: center;"><b>Prior Learning Experiences</b></p> <p><i>Do I use ongoing Formative Assessment to inform the teaching &amp; learning cycle? Do I provide learning experiences that enable students to build on their knowledge?</i></p>	<p style="text-align: center;"><b>Feedback</b></p> <p><i>How will I provide feedback to students?</i></p>	<p style="text-align: center;"><b>Summative Assessment</b></p> <p><i>Does the assessment task indicate how well students understand and can apply their learning? (how well = extent, depth and sophistication of thinking – informs A-E grading)</i></p>	<p style="text-align: center;"><b>Evidence</b></p> <p><i>What evidence am I looking for that demonstrates the student has got it?</i></p>
<p><u><i>It is important that students have had experiences with the learning opportunities below before administering the assessment task.</i></u></p> <p><i>Developing:</i>  <b>Understanding Fluency Problem Solving Reasoning</b></p> <p><u>Through experiences with:</u></p> <ul style="list-style-type: none"> <li>• Number sentences including finding the unknown</li> <li>• Problem solving involving the four operations</li> <li>• Problem solving involving making equal groups</li> <li>• Arrays models for multiplication</li> <li>• Number patterns</li> <li>• Open- ended questions</li> <li>• Exploring commutative properties</li> <li>• Multiplication patterns using a 100's chart</li> <li>• Exploring the vocabulary of patterning (e.g. repeated, term, continuous, etc)</li> <li>• The Card Game interactive software (<i>Natural Maths, Ann &amp; Johnny Baker</i>)</li> <li>• Exploring patterns using combinations of numbers, objects and symbols to represent number sentences (e.g. if <math>N+3 = 5</math>, then <math>N= 2</math>)</li> <li>• Exploring patterns in the real world</li> <li>• Exploring the use of the equals sign (e.g. <i>12 and 4 is the same as 8 and ?</i>)</li> <li>• Exploring the use of symbols and pro numerals to represent values</li> </ul>	<p>Teacher observations</p> <p>Conferences 1:1 with peers &amp; teacher</p> <p>Learning log: Student identifies areas for focus</p> <p>SNW (S- strengths, N – needing improvement, W- where to next)</p> <p>Stars/smiley faces</p>	<p><b>Option 1: Multiplication Patterns</b></p> <p><b>Entry Level</b>                      Create a multiplication number pattern that includes the number 48. Record and explain your pattern.</p> <p><b>Challenge Level</b>                      What if your number pattern had a different starting place? Create a new pattern for the number 48 starting from a different number.</p> <p><b>Option 2: The Baker's Special Muffins</b> <i>(See attachment 4.4)</i></p> <p><b>Entry Level</b> <i>(Adapted from the ACARA Year 4 work samples)</i>                      The baker was arranging her special muffins to get ready to pack them for a birthday party. When she placed them into two rows she found there were equal amounts in each row but there was one muffin left over. When she placed them into three rows she had equal amounts in each row but she had two muffins left over. How many special muffins could there have been? Explain your thinking.</p> <p><i>This narrative could be adapted to suit a range of situations (e.g. the farmer was arranging pigs in different pens to get ready to take them to the royal show; the P.E teacher was arranging students into groups for activity stations, etc.)</i></p> <p><b>Challenge Level</b>                      Design some boxes that would fit all of the special muffins? Is there another way you could solve the problem? How could you represent the solution using number sentences?</p> <p><b>Questioning</b> – “What strategies did you use to help you solve the problem?” “What prior knowledge helped you to solve the problem?” “Did you find any patterns?” “What type of problem would this help you solve in the future?”</p> <p><b>Organisation</b>  <b>Teacher</b> – record prompts on the board or display the problem-solving task; display task; have counters accessible if students choose to use them  <b>Students</b> – attachment 4.4 or recording paper; whiteboards</p>	<p><b>Students will:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate</b> knowledge by continuing number sequences involving multiples.</li> <li>• <b>Show</b> understanding by describing number patterns and creating new number patterns involving multiples.</li> </ul> <p><b>Advanced</b> –Students demonstrate understanding of multiples by creating different number patterns involving a given number. They represent the problem solving task using words, numbers and symbols and record/explain their solutions using mathematical reasoning. They apply their knowledge of multiplicative thinking to solve the challenge level problem.</p> <p><b>Competent</b> –Students demonstrate an understanding of number patterns involving multiples by creating a continuous pattern. They may record several attempts in order to find a solution. They solve word problems using words, numbers and pictures.</p> <p><b>Developing</b> –Students demonstrates some/little understanding of patterns involving multiples. They attempt to solve word problems.</p>

Arrays – how many different arrays of 24 can you make?

Number Facts (x & ÷)

24

Real World Examples – where might you see the arrangement of 24?

Multiplication Patterns – write different number patterns including the number 24

Fruit Salad Recipe – Serves 4 people

- 2 oranges
- $\frac{1}{2}$  punnet strawberries
- 0.5 kg apples
- $\frac{1}{4}$  pineapple
- $\frac{2}{3}$  banana
- $1\frac{1}{2}$  kiwifruit
- 0.4 of a tub of yoghurt



Fruit Salad Recipe – Serves 4 people

- 2 oranges
- $\frac{1}{2}$  punnet strawberries
- 0.5 kg apples
- $\frac{1}{4}$  pineapple
- $\frac{2}{3}$  banana
- $1\frac{1}{2}$  kiwifruit
- 0.4 of a tub of yoghurt



Choose 5 items from the catalogues. Paste each item below.

**Estimated Cost** –show what strategies you used to estimate the total cost of the 5 items

**Actual Cost** –show what strategies you used to calculate the actual cost of the items

**What is the difference between your estimated cost and the actual cost?**

**What notes and coins would you use to purchase the items and why? What change would you receive?**



**Attachment 4.4 - The Baker's Special Muffins**

**Name:**

**Date:**

The baker was arranging her special muffins to get ready to pack them for a birthday party. When she placed them into two rows she found there were equal amounts in each row but there was one muffin left over. When she placed them into three rows she had equal amounts in each row but she had two muffins left over.

**How many special muffins could there have been? Explain your thinking.**

