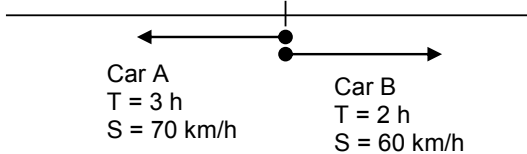

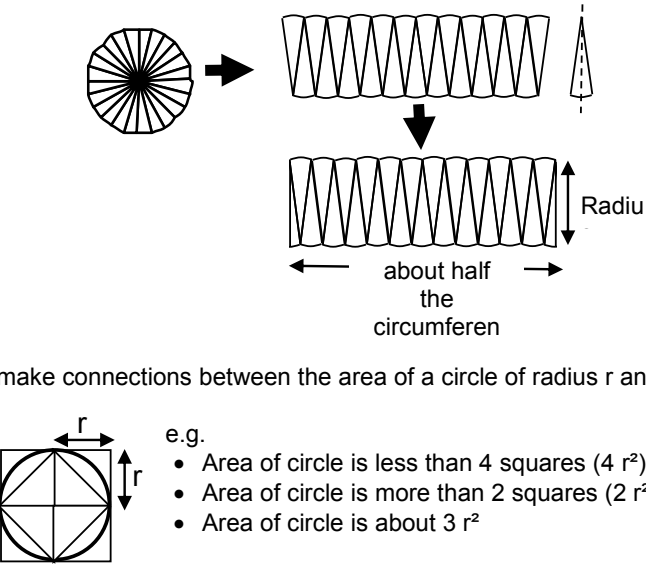


Content	Learning Experiences
PRIMARY SIX	
NUMBER AND ALGEBRA	
SUB-STRAND: FRACTIONS	
1. Four Operations	Students should have opportunities to:
1.1 dividing a proper fraction by a whole number without calculator 1.2 dividing a whole number/proper fraction by a proper fraction without calculator 1.3 solving word problems involving the 4 operations	(a) use fraction discs or digital manipulatives to illustrate the concepts and algorithms for <ul style="list-style-type: none"> - division of a proper fraction by a whole number. - division of a whole number by a proper fraction. - division of a proper fraction by a proper fraction. (b) use calculator to do the 4 operations with fractions (including mixed numbers). (c) solve problems using the part-whole and comparison models. (d) work in groups to solve multi-step word problems and non-routine problems.
SUB-STRAND: PERCENTAGE	
1. Percentage	Students should have opportunities to:
1.1 finding the whole given a part and the percentage 1.2 finding percentage increase/decrease 1.3 solving word problems involving percentage	(a) use a pictorial model to represent a percentage part of a quantity in a given situation, and use the model to find the quantity, e.g. David saved \$30 last month. This was 10% of his pocket money. How much was his pocket money? (b) give real-life examples of percentage change (increase or decrease) and explain how the percentage change is calculated. (c) practise using calculator to find percentage change through games, e.g. In a group, students throw a dice twice and calculate the change (increase/decrease) and then express the change as a percentage of the original value. (d) make connections between the concepts of 'percentage of percentage' and 'fraction of fraction', e.g. John spent 20% of his money on a soccer jersey and 30% of the remaining money on a cap. What percentage of his money did he spend on the cap?

Content	Learning Experiences									
	<p>(e) use the before-after concept to illustrate percentage increase or decrease, e.g. Last year, the country club membership was 2200. This year, it increases by 20%. What is the membership this year?</p> <div><div><div>0%</div><div>100%</div><div>120%</div></div><div><div>2200</div></div><div><div>Last year</div><div></div></div><div><div>This year</div><div></div></div><div><div>?</div></div></div>									
SUB-STRAND:RATIO										
1. Ratio	Students should have opportunities to:									
<p>1.1 relationship between fraction and ratio</p> <p>1.2 solving word problems involving ratio including changing ratios</p>	<p>(a) use concrete objects or draw pictorial models to demonstrate their understanding of fraction statements such as 'A is $\frac{2}{3}$ of B', 'B is $\frac{3}{2}$ of A', and rewrite the statements using ratio.</p> <p>(b) find the ratio of two quantities in direct proportion and use it to solve direct proportion problems, e.g. Find the amount of each ingredient needed to bake 10 dozens of cookies using the following recipe for baking 3 dozen cookies</p> <table><tr><td>1 cup flour</td><td>$\frac{1}{3}$ cup sugar</td><td>1 cup chocolate chips</td></tr><tr><td>$\frac{1}{2}$ teaspoon baking soda</td><td>1 egg</td><td></td></tr><tr><td>$\frac{1}{2}$ cup butter</td><td>$\frac{1}{2}$ teaspoon. vanilla</td><td></td></tr></table> <p>(c) use equivalent ratios and the before-after concept to solve problems involving changing ratio.</p>	1 cup flour	$\frac{1}{3}$ cup sugar	1 cup chocolate chips	$\frac{1}{2}$ teaspoon baking soda	1 egg		$\frac{1}{2}$ cup butter	$\frac{1}{2}$ teaspoon. vanilla	
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Content	Learning Experiences
SUB-STRAND: RATE AND SPEED	
1. Distance, Time and Speed	Students should have opportunities to:
1.1 concepts of speed and average speed 1.2 relationship between distance, time and speed exclude conversion of units e.g. km/h to m/min 1.3 writing speed in different units such as km/h, m/min, m/s and cm/s 1.4 solving up to 3-step word problems involving speed and average speed	(a) talk about speed in real life such as speed of vehicles (e.g. bicycle, motor car, train, aeroplane) and animals (e.g. horse, cheetah) and make comparisons between the different speeds. Also, discuss other examples such as speed limit traffic signs, 100-m run, speedometer in cars and fan speed. (b) talk about a journey and recognise that there are 3 related quantities (distance, time and speed) and given any two quantities, the third quantity can be calculated. (c) draw a diagram to show different scenarios of speed, distance and time (e.g. two vehicles starting from the same point but moving away from each other at constant speeds) and use it to solve problems, e.g. find the distance apart after 3 hours. <p style="text-align: center;">Starting Point</p>  <p style="text-align: center;"> Car A $T = 3 \text{ h}$ $S = 70 \text{ km/h}$ </p> <p style="text-align: center;"> Car B $T = 2 \text{ h}$ $S = 60 \text{ km/h}$ </p>
SUB-STRAND: ALGEBRA	
1. Algebra	Students should have opportunities to:
1.1 using a letter to represent an unknown number 1.2 notation, representations and interpretation of simple algebraic expressions such as <ul style="list-style-type: none"> $a \pm 3$ $a \times 3$ or $3a$ $a \div 3$ or $\frac{a}{3}$ 1.3 simplifying simple linear expressions excluding brackets 1.4 evaluating simple linear expressions by substitution 1.5 solving simple linear equations involving whole number coefficient only in simple context	(a) solve simple equations where the unknown is represented by a box, e.g. $\square + 4 = 10$, $17 - \square = 5$, $6 \times \square = 18$, $\square \div 4 = 8$. (b) use concrete objects (e.g. cubes) or draw diagrams to model simple algebraic expressions. (c) form and solve simple linear equations in word problems and make explicit link with model drawing e.g. There are 50 children in a dance group. If there are 10 more boys than girls, how many girls are there? 

Content	Learning Experiences
	$2\chi = 50 - 10$ $= 40$ $\chi = 40 \div 2$ $= 20$ <p>There are 20 girls.</p>
MEASUREMENT AND GEOMETRY	
SUB-STRAND: AREA AND VOLUME	
1. Area and Circumference of Circle	Students should have opportunities to:
1.1 area and circumference of circle 1.2 finding the area and perimeter of <ul style="list-style-type: none"> • semicircle • quarter circle 1.3 finding the area and perimeter of composite figures made up of square, rectangle, triangle, semicircle and quarter circle	(a) describe circles using terms such as 'centre', 'diameter', 'radius' and 'circumference'. (b) work in pairs to measure and recognise that <ul style="list-style-type: none"> - the distance between the centre and any point on the circumference is always the same. - the bigger the circle, the longer the diameter. - the diameter of a circle is twice its radius. (c) work in groups to measure the circumferences and diameters of different circles, use calculator to work out the value of $\pi \left(= \frac{\text{circumference}}{\text{diameter}} \right)$ and observe that the value is approximately 3.14 or $\frac{22}{7}$. (d) work in groups to measure and discover that the distance travelled by a circle/wheel along a straight line when it makes one complete turn without skipping is equal to its circumference. (e) estimate the area of a circle using square grid. (f) work in groups to cut a circle into 24 pieces and use the pieces to form a rectangle as shown (one of the pieces has to be cut further into halves) to find the area of the circle.

Content	Learning Experiences
	<p style="text-align: center;">Area of the circle = $\pi \times \text{Radius} \times \text{Radius}$</p>  <p>(g) make connections between the area of a circle of radius r and the area of a square of length r</p> <p>e.g.</p> <ul style="list-style-type: none"> • Area of circle is less than 4 squares ($4r^2$) • Area of circle is more than 2 squares ($2r^2$) • Area of circle is about $3r^2$
<p>2. Volume of Cube and Cuboid</p> <p>2.1 finding one dimension of a cuboid given its volume and the other dimensions</p> <p>2.2 finding the length of one edge of a cube given its volume</p> <p>2.3 finding the height of a cuboid given its volume and base area</p> <p>2.4 finding the area of a face of a cuboid given its volume and one dimension</p> <p>2.5 use of $\sqrt{\quad}$, $\sqrt[3]{\quad}$</p>	<p>Students should have opportunities to:</p> <p>(a) build cubes of different sizes using unit cubes (or connecting cubes) and commit to memory the volumes of the cubes.</p> <p>(b) build a cuboid using unit cubes and determine its height given its volume (total number of unit cubes) and base area (product of two dimensions).</p> <p>(c) use calculator to explore</p> <ul style="list-style-type: none"> - the square roots of numbers and relate them to the lengths of squares given their areas. - the cube roots of numbers and relate them to the edge lengths of cubes given their volumes.

Content	Learning Experiences
SUB-STRAND: GEOMETRY	
1. Special Quadrilaterals	Students should have opportunities to:
1.1 finding unknown angles, without additional construction of lines, in composite geometric figures involving <ul style="list-style-type: none"> • square • rectangle • triangle • parallelogram • rhombus • trapezium 	(a) use the properties of triangles and special quadrilaterals to find unknown angles and explain how they obtain the answers.
2. Nets	Students should have opportunities to:
2.1 identifying and drawing 2D representations of <ul style="list-style-type: none"> • cube • cuboid • cone • cylinder • prism • pyramid 2.2 identifying the nets of 3D solids <ul style="list-style-type: none"> • cube • cuboid • prism • pyramid 2.3 identifying the solid which can be formed by a given net	(a) look for examples of prisms and pyramids in their environment and discuss the similarities and differences between them. (b) draw 3D objects that are in the shape of prisms or pyramids. (c) visualise and draw a net of a cube, and justify that it is a net of the cube by cutting it out and folding it to form the cube. (d) work in groups to make nets of 3D shapes using geoshapes (or polydrons).

Content	Learning Experiences
STATISTICS	
SUB-STRAND: DATA REPRESENTATION AND INTERPRETATION	
1. Pie Charts	Students should have the opportunities to:
1.1 reading and interpreting data from pie charts 1.2 solving 1-step problems using data from tables/graphs	(a) discuss examples of data presented in pie charts, and make connections between pie charts and other graphic representations of data. (b) use the concept of proportionality to interpret data presented in pie charts in terms of percentages or fractions. (c) construct a pie chart using a spreadsheet e.g. Excel. (d) use data to make informed decisions and predictions.