

YEAR



Ministry of Education  
Malaysia

Integrated Curriculum for Primary Schools  
CURRICULUM SPECIFICATIONS

# MATHEMATICS



Curriculum Development Centre  
Ministry of Education Malaysia  
2006

# Topic 1: WHOLE NUMBERS

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Develop number sense involving numbers of up to 100 000.</p>	<p>Use the calculator, abacus and/or ruler to explore various aspects of numbers in the context of daily life experiences.</p> <p>Compare numbers with the aid of a ruler to explain why a particular number has a bigger or smaller value.</p>	<p>(i) Name and write numbers up to 100 000.</p> <p>(ii) Determine the place value of the digits in any whole number up to 100 000.</p> <p>(iii) Compare value of numbers to 100 000.</p> <p>(iv) Round off numbers to the nearest tens, hundreds and thousands.</p>	<p>Naming and writing numbers to include numbers in extended notation, for example:</p> $76\ 051 = 70\ 000 + 6\ 000 + 0 + 50 + 1$ $76\ 051 = 76\ \text{thousands} + 5\ \text{tens} + 1\ \text{ones}$ $76\ 051 = 7\ \text{ten thousands} + 6\ \text{thousands} + 5\ \text{tens} + 1\ \text{ones}$ <p>Estimate quantities up to 100 000.</p> <p>The number line can be used to model number cardinality. The longer line represents a higher number and the shorter line otherwise.</p>	<p>number</p> <p>numerals</p> <p>count</p> <p>place value</p> <p>value of the digits</p> <p>partition</p> <p>estimate</p> <p>check</p> <p>compare</p> <p>count in hundreds</p> <p>ten thousands</p> <p>round off to the nearest</p> <p>tens</p> <p>hundreds</p> <p>thousands</p>

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<p>Add numbers to the total of 100 000.</p>	<p>Pupils add any two to four numbers using</p> <ul style="list-style-type: none"> <li>number sentence (horizontal form) <math>47\ 325 + 895 =</math></li> <li>vertical form</li> </ul> $  \begin{array}{r}  3\ 3\ 4\ 8\ 3 \\  1\ 8\ 3\ 7\ 9 \\  +\ 2\ 8\ 3\ 5\ 1 \\  \hline  \end{array}  $ <p>Expose pupils to quick addition strategies, such as, pairing of ten, doubling, estimation, etc.</p> <p>Pupils practice mental addition by using the abacus as an addition model.</p> <p>Pupils create stories from given addition number sentences.</p> <p>Pose to pupils problems in all forms, i.e. numerical, simple sentences, tables and pictures.</p>	<p>(i) Add any two to four numbers to 100 000.</p> <p>(ii) Solve addition problems.</p>	<p>Allow pupils to perform estimation either before or after addition. Estimating answers before adding builds confidence among pupils, while estimating after adding provides a check on operation performed.</p> <p>An example of a quick addition strategy, i.e. pairing of ten, is as follows (refer to the addition example in the Suggested Teaching and Learning Activities column):</p> <p>In the ones place value, add 9 and 1 to make 10. Then 10 and 3 make 13. Apply this pairs of ten strategy where appropriate for the rest of the operation.</p> <p>The ability to solve addition problems is to be developed by first providing story construction exercises. Then, provide exercises to transform simple sentences to number sentences, for example:</p> <p>“How many is three added to five?”</p> $\square = 3 + 5$ <p>After pupils are familiar with story construction and transformation activities, provide word problems exercises.</p>	<p>number sentences vertical form without trading trading quick calculation pairs of ten double numbers estimates range</p>

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Subtract numbers from a number less than 100 000.	<p>Pupils subtract one or two numbers from a number using number sentences in the vertical form.</p> <p>Allow pupils to check answers by performing estimations.</p> <p>Expose pupils to quick subtraction strategies, such as, estimation, pairing of ten, count on and count back, etc.</p> <p>Pupils practice mental subtraction by using the abacus as a subtraction model.</p>	(i) Subtract one or two numbers from a bigger number less than 100 000.	<p>Limit problems to the subtraction of a number from a bigger number.</p> <p>Include also subtracting successively two numbers from a bigger number.</p> <p>Provide the experience of performing subtraction by writing number sentences in the horizontal and vertical form.</p> <p>Emphasise subtraction as take away, difference or inverse of addition where appropriate.</p> <p>Allow pupils to practice mental calculation.</p>	<p>number sentence</p> <p>vertical form</p> <p>without trading</p> <p>with trading</p> <p>quick calculation</p> <p>pair of tens</p> <p>count on</p> <p>estimates</p> <p>range</p>
	<p>Pupils create stories from given subtraction number sentences.</p> <p>Pose to pupils problems in all forms, i.e. numerical, simple sentences, tables and pictures.</p>	(ii) Solve subtraction problems.	<p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul>	

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Multiply any two numbers with the highest product of 100 000.	<p>Pupils multiply by writing number sentences in the vertical and horizontal form and model multiplication using the number line or other aids.</p> <p>Expose pupils to various strategies in multiplication, such as, multiples of a number, benchmarking of tens, hundreds, and so on.</p> <p>Introduce to pupils some properties of multiplication, for example:</p> <p><b>commutative property,</b>  <math>90 \times 8 = 8 \times 90</math></p> <p><b>associative property,</b>  <math>(96 + 42) + 16 = 96 + (42 + 16)</math></p> <p>Pupils practice mental multiplication by using the abacus as the multiplication model.</p>	<p>(i) Multiply three-digit numbers with</p> <ul style="list-style-type: none"> <li>○ 100,</li> <li>○ two-digit numbers.</li> </ul> <p>(ii) Multiply four-digit numbers with</p> <ul style="list-style-type: none"> <li>○ one-digit numbers,</li> <li>○ 10,</li> <li>○ two-digit numbers.</li> </ul> <p>(iii) Multiply two-digit numbers with 1 000.</p>	<p>Multiplication exercises should include:</p> <ul style="list-style-type: none"> <li>• without trading (without regrouping).</li> <li>• with trading (with regrouping).</li> </ul> <p>Limit products to less than 100 000.</p> <p>Provide regular exercise of recalling basic facts of multiplication, followed by multiplication exercises in the vertical form of multiplication number sentences.</p> <p>Names of multiplication properties need not be introduced.</p> <p>Examples of multiplication strategies:</p> <p><math>4\ 385 \times 18</math>  <math>= (4\ 385 \times 20) - (4\ 385 \times 2)</math></p> <p>lattice multiplication.</p> <div style="text-align: center;"> <math display="block">\begin{array}{cccc} 4 &amp; 3 &amp; 8 &amp; 5 &amp; \times \\ \hline 0 &amp; 4 &amp; 0 &amp; 0 &amp; 1 \\ \hline 3 &amp; 2 &amp; 6 &amp; 4 &amp; 8 \\ \hline \end{array}</math> </div>	<p>times</p> <p>multiply</p> <p>multiplied by</p> <p>multiple of</p> <p>various</p> <p>commutative</p> <p>associative</p> <p>estimates</p>

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	<p>Pupils create stories from a given multiplication number sentence, for example:  <math>6500 \times 6 = 39\ 000</math>                      “A company printed 6500 copies of magazines per week. In 6 weeks 39 000 copies were printed”.</p> <p>Pose to pupils, problems in the form of tables, words and pictures.</p>	<p>(iv) Solve multiplication problems.</p>	<p>Approach problem solving using Polya’s four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> <p>Make sensible estimations to check products of multiplication.</p>	<p>times                      multiply                      multiplied by                      multiple of                      commutative                      associative                      estimates                      lattice                      multiplication</p>

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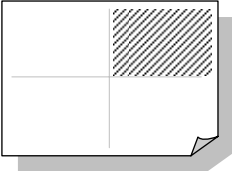
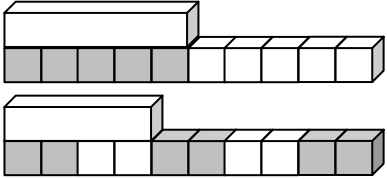
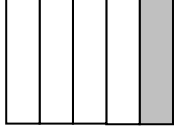
LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Divide a number less than 100 000 by a two-digit number.</p>	<p>Model division using the number line or other aids and divide using the long division method.</p> <p>Exposed pupils to various strategies in division such as, divisibility of a number, divide by 10, 100 and 1000, etc. Pupils practice mental division by using the abacus as a division model.</p> <p>Pupils create stories from given division number sentences. Pose daily problems in the form of words, tables and pictorials.</p>	<p>(i) Divide four-digit numbers by</p> <ul style="list-style-type: none"> <li>○ one-digit numbers,</li> <li>○ 10, 100 and 1000,</li> <li>○ two-digit numbers.</li> </ul> <p>(ii) Divide five-digit numbers by</p> <ul style="list-style-type: none"> <li>○ one-digit numbers,</li> <li>○ 10, 100 and 1000,</li> <li>○ two-digit numbers.</li> </ul> <p>(iii) Solve division problems.</p>	<p>Exercises should include:</p> <p>Division without trading (without regrouping).</p> <ul style="list-style-type: none"> <li>• without remainder,</li> <li>• with remainder.</li> </ul> <p>Division with trading (with regrouping).</p> <ul style="list-style-type: none"> <li>• without remainder,</li> <li>• with remainder.</li> </ul> <p>Provide regular exercise of recalling basic facts of division, followed by the long division exercise.</p> <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> <p>Make sensible estimations to check quotients.</p>	<p>divide</p> <p>dividend</p> <p>quotient</p> <p>divisor</p> <p>remainder</p> <p>factors</p> <p>long division</p>

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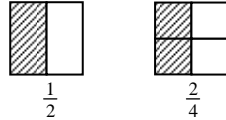
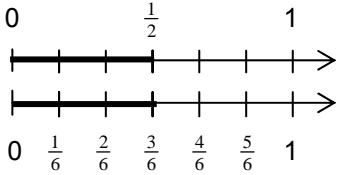
LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
Perform mixed operation involving addition and subtraction.	Perform mixed operation in the form of number sentences (vertical and horizontal) and model the operation using the number line or other aids.  Pupils practice mental computations by using the abacus as a computation model.	(i) Perform mixed operations involving addition and subtraction with numbers less than <ul style="list-style-type: none"> <li>○ 100,</li> <li>○ 1 000,</li> <li>○ 10 000.</li> </ul>	For mixed operation numerical problems involving addition and subtraction calculate from left to right.  Examples of mixed operation numerical problems $48 + 62 - 93 = \square$ $597 - 128 + 473 = \square$ $4825 - 3215 + 1600 = \square$ Avoid problems such as $2 - 4 + 8 = ?$	mixed operation
	Pupils create stories from given mixed operations number sentences.  Pose to pupils, daily problems in the form of words, tables and pictorials.	(ii) Solve mixed operation problems.	Approach problem solving using Polya's four-step algorithm of <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> Make sensible estimations to check solutions.	



# Topic 2: FRACTIONS

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Name and write proper fractions with denominators up to 10.</p>	<p>Partition concrete objects or manipulative materials into equal parts and compare parts to the whole to introduce proper fractions, for example:</p> <p><b>Paper</b></p>  <p>Partition paper equally by folding.</p> <p><b>Fraction chart/strips and Cuisenaire rods</b></p>  <p>Compare the values of two proper fractions with fraction strips and Cuisenaire rods.</p>	<p>(i) Name and write proper fractions with denominators up to 10.</p> <p>(ii) Compare the value of two proper fractions with</p> <ul style="list-style-type: none"> <li>○ the same denominators,</li> <li>○ the numerator of 1 and different denominators up to 10.</li> </ul>	<p>Emphasise fraction as:</p> <ul style="list-style-type: none"> <li>• equal size portions of a whole,</li> <li>• equal shares of a whole set.</li> </ul>  <p>The shaded portion of the whole figure is one part out of five. It is written in the fraction form as <math>\frac{1}{5}</math>. We say it as “one over five” or “one fifth”.</p> <p>Relate fractions to quantities such as volume, length and mass.</p>	<p>proper fraction numerator denominator equivalent one over two half one half two halves quarter portions compare</p>

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Express equivalent fractions for proper fractions.	<p>Express equivalent fractions with the aid of fraction charts or strips, strings, number lines and graphics using conventional technology or ICT.</p> <p>Use number lines, fraction chart or strips, suitable graphics and ICT to express equivalent fractions in its simplest form.</p>	<p>(i) Express and write equivalent fractions for proper fractions.</p> <p>(ii) Express equivalent fractions to its simplest form.</p>	<p>Two fractions of different numerator and denominator but with the same value are equivalent fractions. The examples below illustrate the idea.</p> <p>a) </p> <p>b) </p> <p>c) <math>\frac{1 \times 2}{3 \times 2} = \frac{2}{6}</math></p> <p>The value of a fraction will not change when both the numerator and denominator are multiplied or divided by the same number.</p> <p>A fraction in the simplest form is a fraction with its numerator and denominator not divisible by any number except 1.</p>	proper fraction equivalent fraction number line


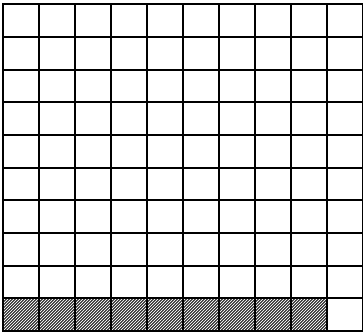
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LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Add two proper fractions with denominators up to 10.</p>	<p>Demonstrate addition of proper fractions through paper folding activity or use fraction charts, diagrams and number lines.</p> <p>Pupils add two proper fractions by converting one of the fractions or both to their equivalent form.</p> <p>Pupils create stories from given number sentences involving fractions.</p> <p>Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(i) Add two proper fractions with the same denominator up to 10 to its simplest form</p> <ul style="list-style-type: none"> <li>○ with 1 as the numerator for both fractions,</li> <li>○ with different numerators.</li> </ul> <p>(ii) Add two proper fractions with different denominators up to 10 to its simplest form</p> <ul style="list-style-type: none"> <li>○ with 1 as the numerator for both fractions,</li> <li>○ with different numerators.</li> </ul> <p>(iii) Solve problems involving addition of proper fractions.</p>	<p>Limit exercises so that the sum of the two proper fractions is less than or equal to 1, for example</p> <p>a) <math>\frac{1}{3} + \frac{1}{3}</math></p> <p>b) <math>\frac{1}{4} + \frac{3}{4}</math></p> <p>Examples of addition using equivalent fractions are as follows:-</p> $\begin{aligned} & \frac{1}{8} + \frac{1}{4} \\ &= \frac{1}{8} + \frac{1}{4} \times 2 \\ &= \frac{1}{8} + \frac{2}{8} \\ &= \frac{1+2}{8} \\ &= \frac{3}{8} \end{aligned}$ <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul>	<p>simplest form</p> <p>multiples</p> <p>fraction chart</p> <p>diagram</p> <p>number line</p> <p>solve problem</p>

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<p>Subtract proper fractions with denominators up to 10.</p>	<p>Demonstrate subtraction of proper fractions through paper folding activities or use charts, diagrams and number lines.</p> <p>Pupils create stories from given number sentences involving fractions.</p> <p>Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(i) Subtract two proper fractions with the same denominator up to 10 to its simplest form</p> <ul style="list-style-type: none"> <li>○ with 1 as the numerator for both fractions,</li> <li>○ with different numerators.</li> </ul> <p>(ii) Subtract two proper fractions with different denominators up to 10 to its simplest form</p> <ul style="list-style-type: none"> <li>○ with 1 as the numerator for both fractions,</li> <li>○ with different numerators.</li> </ul> <p>(iii) Solve problems involving subtraction of proper fractions.</p>	<p>Examples of subtraction of proper fraction are as follows</p> <p>a) <math>\frac{3}{5} - \frac{1}{5} = \frac{3-1}{5} = \frac{2}{5}</math></p> <p>b) <math>\frac{5}{6} - \frac{1}{3}</math></p> $= \frac{5}{6} - \frac{1}{3} \times 2$ $= \frac{5}{6} - \frac{2}{6}$ $= \frac{5-2}{6}$ $= \frac{3}{6} \div 3$ $= \frac{1}{2}$ <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul>	<p>simplest form</p> <p>multiply</p> <p>fraction chart</p> <p>diagram</p> <p>number line</p> <p>solve problem</p>

# Topic 3: DECIMALS

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Understand decimal numbers.</p>	<p>Teacher introduces the concept of decimals using Diene's blocks, hundred squares, place value chart and number line.</p> <p>Pupils find and present quantities that use decimals in daily situations, example capacity of milk, water, weight of sugar/flour/biscuits, oil, and money.</p>	<p>(i) Name and write decimals with</p> <ul style="list-style-type: none"> <li>○ one decimal place,</li> <li>○ two decimal places.</li> </ul>	<p>Using decimals is another way of representing values less than 1.</p> <p>Decimals are fractions of tenth, hundredth and so on.</p>  <p>Diene's block representing 0.3, three parts out of 10.</p> <p>0.3 is read as "three tenths" but commonly said nominally as "zero point three".</p> <p>7.81 is "seven and eighty-one hundredth".</p> <p>43.69 is "forty-three and sixty-nine hundredth".</p>  <p>Hundred squares representing 0.09, nine parts out of 100.</p> <p>Types of decimals:</p> <ul style="list-style-type: none"> <li>• decimal fraction, e.g. 0.4</li> <li>• mixed decimals, e.g. 3.7</li> </ul> <p>State "zero" before a decimal point where relevant.</p>	<p>decimals</p> <p>place-value chart</p> <p>tenth</p> <p>hundredth</p> <p>hundred squares</p> <p>decimal point</p> <p>decimal place</p> <p>decimal fraction</p>

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	<p>Pupils write digits of given decimal numbers in the place value chart.</p>	<p>(ii) Recognise the place value of</p> <ul style="list-style-type: none"> <li>○ tenths,</li> <li>○ hundredths,</li> <li>○ tenths and hundredths.</li> </ul> <p>(iii) Convert fraction to decimals of</p> <ul style="list-style-type: none"> <li>○ tenths,</li> <li>○ hundredths,</li> <li>○ tenths and hundredths,</li> </ul> <p>and vice versa</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Tens</td> <td style="padding: 5px;">Ones</td> <td style="padding: 5px;">Tenths</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"></td> <td style="text-align: center; padding: 5px;">3</td> </tr> </table> <p>The place value chart showing 0.3.</p>	Tens	Ones	Tenths			3	<p>mixed decimal convert tenths hundredths</p>
Tens	Ones	Tenths								
		3								

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LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Add decimals up to two decimal places.</p>	<p>Pupils perform addition of decimals through number sentences and use number lines to model addition of any two to four decimal numbers.</p> <p>Pupils create stories from given number sentences. Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(i) Add any two to four decimals of one decimal place involving</p> <ul style="list-style-type: none"> <li>○ decimals only,</li> <li>○ whole numbers and decimals,</li> <li>○ mixed decimals.</li> </ul> <p>(ii) Add any two to four decimals of two decimal places involving</p> <ul style="list-style-type: none"> <li>○ decimals only,</li> <li>○ whole numbers and decimals,</li> <li>○ mixed decimals.</li> </ul> <p>(iii) Solve problems involving addition of decimal numbers.</p>	<p>Note the place values after a decimal point.</p> <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> <p>Make sensible estimations to check solutions.</p>	<p>vertical mixed decimals place value decimal point estimates range</p>

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LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Subtract decimals up to two decimal places.</p>	<p>Pupils model subtraction of decimals using number lines and subtract decimal numbers through number sentences in the vertical form.</p> <p>Pupils create stories from given number sentences.</p> <p>Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(i) Subtract one to two decimals from a decimal of one decimal place involving</p> <ul style="list-style-type: none"> <li>○ decimals only,</li> <li>○ mixed decimals,</li> <li>○ whole numbers and decimals (mixed decimals).</li> </ul> <p>(ii) Subtract one to two decimals of one or two decimal places.</p> <p>(iii) Solve problems involving subtraction of decimals.</p>	<p>Note the place values after a decimal point.</p> <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> <p>Make sensible estimations to check solutions.</p>	<p>vertical</p> <p>mixed decimals</p> <p>place value</p> <p>decimal point</p> <p>estimates</p> <p>range</p>



# Topic 3: DECIMALS

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Multiply decimals up to two decimal places with a whole number.</p>	<p>Pupils model multiplication of decimals using number lines and multiply decimal numbers using number sentences in the vertical form.</p> <p>Pupils create stories from given number sentences.</p> <p>Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(i) Multiply any decimal of one decimal place with</p> <ul style="list-style-type: none"> <li>○ one-digit number,</li> <li>○ 10, 100 and 1000.</li> </ul> <p>(ii) Multiply any decimals of two decimal places with</p> <ul style="list-style-type: none"> <li>○ one-digit number,</li> <li>○ 10, 100 and 1000.</li> </ul> <p>(iii) Solve problems involving multiplication of decimals.</p>	<p>Provide pupils with exercises of performing multiplication of decimals by writing in the vertical form.</p> <p>Note the place values after a decimal point.</p> <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> <p>Make sensible estimations to check solutions.</p>	<p>vertical form</p> <p>decimal point</p> <p>estimates</p> <p>range</p> <p>decimal place</p>



# Topic 3: DECIMALS

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
Divide decimals up to two decimal places by a whole number.	Pupils model division of decimals using number lines and divide decimal numbers by the long division method.	(i) Divide decimals of one decimal place by <ul style="list-style-type: none"> <li>○ one-digit number,</li> <li>○ 10.</li> </ul>	Limit exercises with dividends of up to two decimal places only, for example: $3 \div 2 = 1.5$ $1.4 \div 4 = 0.35$	value long division divide dividends quotient division remainder factor
	Pupils create stories from given number sentences. Pose to pupils, daily problems in the form of words, tables and pictorials.	(ii) Divide decimals of two decimal places by one-digit number. (iii) Divide decimals by a whole number with the dividend value of up to two decimal places. (iv) Solve problems involving division of decimals.	Approach problem solving using Polya's four-step algorithm of <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> Make sensible estimations to check solutions.	

# Topic 4: MONEY

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
1. Understand and use the vocabulary related to money.	Show different combinations of notes and coins to represent a given amount of money.	(i) Read and write the value of money up to RM10 000.		RM sen note
2. Use and apply knowledge of money in real life situation.	<p>Perform basic operations involving money by writing number sentences in the vertical and horizontal form.</p> <p>Pupils perform mixed operations involving money by writing number sentences in the vertical and horizontal.</p> <p>Pupils create stories from given number sentences. Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(i) Add money up to RM10 000.</p> <p>(ii) Subtract money from up to RM10 000.</p> <p>(iii) Multiply money to the highest product of RM10 000.</p> <p>(iv) Divide money with dividend not more than RM10 000.</p> <p>(v) Perform mixed operation involving addition and subtraction involving money up to RM10 000.</p> <p>(vi) Round off money to the nearest "ringgit".</p> <p>(vii) Solve problems involving money of up to RM10 000</p>	<p>Perform addition and subtraction of money by writing number sentences in the vertical form.</p> <p>Limit, a) addition to the highest total of RM10 000, and b) subtraction within the range of RM10 000.</p> <p>Exclude division with remainders.</p> <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> <p>Make sensible estimations to check solutions.</p>	<p>coin value total</p> <p>balance amount buy sell</p>

# Topic 5: TIME

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
Understand, read and write time in hours and minutes.	Teacher introduce how to read and write time in hours and minutes using analog clock and digital clock.	<p>(i) Read time in hours and minutes according to the 12-hours system.</p> <p>(ii) Write time in hours and minutes according to the 12-hours system.</p>	<p>The proper way of reading and writing time.</p>  <p>Say, "Nine o'clock in the morning" and write, "9:00 a.m.".</p>  <p>Say, "Nine fifteen in the evening" or, "A quarter past nine in the evening", and write, "9:15 p.m.".</p>	<p>ante meridiem post meridiem</p>

# Topic 5: TIME

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY																		
1. Construct a simple schedule.	<p>Pupils gather information to construct a simple schedule, for example:</p> <table border="1"> <thead> <tr> <th>Time</th> <th>Activities</th> </tr> </thead> <tbody> <tr> <td>7:45 – 1:00 p.m</td> <td>school</td> </tr> <tr> <td>1:00 – 2:00 p.m</td> <td>lunch</td> </tr> <tr> <td>2:00 – 3:30 p.m</td> <td>extra class</td> </tr> <tr> <td>3:30 – 4:30 p.m</td> <td>homework</td> </tr> <tr> <td>5:00 – 6:30 p.m</td> <td>games/sport</td> </tr> <tr> <td>6:30 – 8:00 p.m</td> <td>dinner</td> </tr> <tr> <td>8:00 – 9:30 p.m</td> <td>watch tv</td> </tr> <tr> <td>9:30 p.m</td> <td>go to bed</td> </tr> </tbody> </table>	Time	Activities	7:45 – 1:00 p.m	school	1:00 – 2:00 p.m	lunch	2:00 – 3:30 p.m	extra class	3:30 – 4:30 p.m	homework	5:00 – 6:30 p.m	games/sport	6:30 – 8:00 p.m	dinner	8:00 – 9:30 p.m	watch tv	9:30 p.m	go to bed	(i) Construct, read and extract information from a simple schedule.	<p>Ante meridiem (a.m.) refers to the time 12:01 in the morning to 11:59 in the morning.</p> <p>Post meridiem (p.m.) refers to the time 12:00 noon onwards till 11:59 at night.</p> <p>Provide experiences of constructing time-tables involving daily activities of pupils.</p>	<p>schedule</p> <p>activity</p> <p>daily</p> <p>construct</p> <p>gather information</p> <p>extract information</p>
Time	Activities																					
7:45 – 1:00 p.m	school																					
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9:30 p.m	go to bed																					
2. Read a calendar.	<p>Pupils explore the calendar to look for names of the months in a year.</p> <p>Pupils arrange in sequence, the months of a year.</p>	<p>(i) Extract information from a calendar.</p> <p>(ii) Solve simple real life problems involving reading the calendar.</p>	<p>Emphasise to pupils that a calendar contains the following information;</p> <ul style="list-style-type: none"> <li>• days in a given month,</li> <li>• weeks in a given month,</li> <li>• day in a given year,</li> <li>• holidays in a given month,</li> <li>• festivals in a month.</li> </ul> <p>There are different types of calendars such as, the Roman, Hijrah, Lunar (Chinese) and Aandu (Tamil) calendars.</p>	<p>leap year</p> <p>January</p> <p>February</p> <p>March</p> <p>April</p> <p>May</p> <p>June</p> <p>July</p> <p>August</p> <p>September</p> <p>October</p> <p>November</p> <p>December</p> <p>Holiday</p>																		

# Topic 5: TIME

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Understand the relationship between units of time.</p>	<p>Pupils explore the calendar to look for time relationships between years and days.</p> <p>Pupils convert units of time, for example,</p> <ul style="list-style-type: none"> <li>• 2 decades = 20 years</li> <li>• <math>\frac{1}{2}</math> decade = 5 years</li> <li>• 4 months = <math>\frac{1}{3}</math> year</li> <li>• <math>\frac{3}{4}</math> day = 18 hours</li> <li>• <math>\frac{1}{4}</math> hours = 15 minutes</li> <li>• 20 years = 2 decades</li> <li>• 36 months = 3 years</li> </ul> <p>Pupils convert time, for example,</p> <ul style="list-style-type: none"> <li>• 3 hours = 180 minutes</li> <li>• 2 hours 40 minutes = 160 minutes</li> <li>• 250 minutes = 4 hours and 10 minutes</li> </ul>	<p>(i) State the relationship between units of time:-</p> <ul style="list-style-type: none"> <li>○ 1 day = 24 hours,</li> <li>○ 1 year = 365 / 366 days,</li> <li>○ 1 decade = 10 years.</li> </ul> <p>(ii) Convert</p> <ul style="list-style-type: none"> <li>○ years to days, and vice versa,</li> <li>○ decades to years, and vice versa,</li> <li>○ years to months, and vice versa,</li> <li>○ hours to days, and vice versa.</li> </ul> <p>(iii) Convert time from</p> <ul style="list-style-type: none"> <li>○ hours to minutes, and vice versa,</li> <li>○ hours and minutes to minutes, and vice versa,</li> <li>○ minutes to hours and minutes, and vice versa,</li> </ul>	<p>The time relationship between months and days, i.e. 1 month = 30 days is an approximation.</p> <p>Conversion of units of time should also include proper fractions.</p>	<p>decade convert year day</p>

# Topic 5: TIME

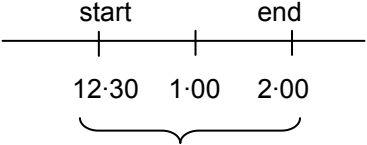
LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Add, subtract, multiply and divide units of time.</p>	<p>Pupils add, subtract, multiply and divide time and convert units of time. Units of time involve minutes, hours, months, years, and decades.</p>	<p>(i) Add time involving conversion of units with answers in compound units of :</p> <ul style="list-style-type: none"> <li>○ hours and minutes,</li> <li>○ years and months,</li> <li>○ decades and years.</li> </ul> <p>(ii) Subtract time involving conversion of units with answers in compound units of :</p> <ul style="list-style-type: none"> <li>○ hours and minutes,</li> <li>○ years and months,</li> <li>○ decades and years.</li> </ul> <p>(iii) Multiply time involving conversion of units with answers in compound units of :</p> <ul style="list-style-type: none"> <li>○ hours and minutes,</li> <li>○ years and months,</li> <li>○ decades and years.</li> </ul>	<p>Practice mental calculation. Show calculation through number sentence in the vertical form.</p> <p>Examples of addition and subtraction activities:</p> <ul style="list-style-type: none"> <li>• 30 minutes + 45 minutes = 75 minutes = 1 hour 15 minutes.</li> <li>• 15 hours + 17 hours = 32 hours = 1 day 8 hours.</li> <li>• 22 months – 4 months = 18 months = 1 year 6 months.</li> <li>• 27 years + 2 years = 29 years = 2 decades 9 years.</li> </ul> <p>Practice mental multiplication and division.</p> <p>Limit multiplicand and divisor to a single digit and exclude remainders.</p>	<p>hour minute add plus total sum subtract minus take away difference altogether</p>

# Topic 5: TIME

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
	<p>Pupils create stories about time from given number sentences Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(iv) Divide time involving conversion of units with answers in compound units for time duration of :</p> <ul style="list-style-type: none"> <li>○ hours and minutes,</li> <li>○ years and months,</li> <li>○ decades and years.</li> </ul> <p>(v) Solve problems involving basic operations of time:</p> <ul style="list-style-type: none"> <li>○ hours and minutes,</li> <li>○ years and months,</li> <li>○ decades and years.</li> </ul>	<p>Examples of multiplication and division activities:</p> <p>20 minutes <math>\times</math> 4 = 80 mins = 1 hr 20 mins</p> $\begin{array}{r} 45 \\ 5 \overline{)225} \end{array}$ <p>45 yrs = 4 decades 5 yrs.</p> <p>Approach problem solving using Polya's four-step algorithm of</p> <ul style="list-style-type: none"> <li>• Understanding the problem</li> <li>• Devising a plan</li> <li>• Implementing the plan</li> <li>• Checking the solution</li> </ul> <p>Make sensible estimations to check solutions.</p>	



# Topic 5: TIME

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Use and apply knowledge of time to find the duration.</p>	<p>Pupils extract information from schedules, such as class timetable, prayer schedule, bus schedule, etc.</p> <p>Pupils model time on a number line to determine the duration of an event, for example 12:30 to 2:00 pm: lunch</p>  <p>1 hr 30 min Duration for lunch is 1 hour 30 mins.</p>	<p>(i) Read and state the start and end of an event from a schedule.</p> <p>(ii) Calculate the duration of an event from a schedule in</p> <ul style="list-style-type: none"> <li>○ minutes,</li> <li>○ hours,</li> <li>○ hours and minutes within a day and two consecutive live days.</li> </ul> <p>(iii) Calculate the start or the end of an event from a given duration of time and read the start or end of an event.</p>	<p>Expose pupils to a variety of schedules.</p>	<p>clock analog digital display</p> <p>a.m. p.m. duration schedule event program start end Period</p>

# Topic 6: LENGTH

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
Measure lengths using standard units.	<p>Pupils measure, read and record lengths of objects. The following tools are used to measure lengths:</p> <ul style="list-style-type: none"> <li>• metre ruler,</li> <li>• small ruler,</li> <li>• measuring tape.</li> </ul>	<p>(i) Read measurement of length using units of millimetre.</p> <p>(ii) Write measurement of length to the nearest scales of tenth division for:</p> <ul style="list-style-type: none"> <li>○ centimetre,</li> <li>○ metre.</li> </ul> <p>(iii) Measure and record lengths of objects using units of</p> <ul style="list-style-type: none"> <li>○ millimetre,</li> <li>○ centimetre and millimetre,</li> <li>○ metre and centimetre.</li> </ul> <p>(iv) Estimate the lengths of objects in</p> <ul style="list-style-type: none"> <li>○ millimetre,</li> <li>○ metre and millimetre,</li> <li>○ centimetre and millimetre.</li> </ul>	<p>Depth and height are examples of length.</p> <p>Emphasise that measuring should start from the '0' mark of the rule.</p> <p>Remind pupils that the symbols for the units of length are:</p> <ul style="list-style-type: none"> <li>• m for metre,</li> <li>• cm for centimetre,</li> <li>• mm for millimetre.</li> </ul> <p>Measurements are made to the nearest metre, centimetre and millimetre.</p> <p>Include compound units.</p> <p>Encourage pupils to check for reasonableness of estimations.</p>	<p>read</p> <p>scale</p> <p>measure</p> <p>measuring tape</p> <p>divisions</p> <p>length</p> <p>width</p> <p>height</p> <p>depth</p> <p>compare</p> <p>measurement</p> <p>record</p> <p>compound</p>

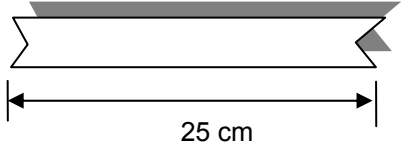
# Topic 6: LENGTH

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
Understand the relationship between units of length.	<p>Pupils construct tables of relationship between units of length.</p> <p>Pupils use conversion tables to convert from one unit of length to another.</p>	<p>(i) State the relationship between centimetre and millimetre.</p> <p>(ii) Convert units of length from:</p> <ul style="list-style-type: none"> <li>○ millimetres to centimetres and vice versa,</li> <li>○ compound units to a single unit.</li> </ul>	<p>Emphasise these units of length relationships:</p> <p>1 m = 100 cm 1 cm = 10 mm</p> <p>Examples of conversion exercises for units of length:</p> <p>200 cm = 2 m 2 m = 200 cm 5 cm = 50 mm 50 mm = 5 cm 1 m 50 cm = 150 cm = 1.5 m 5 m 30 cm = 530 cm = 5.3 m</p>	measurement relationship

# Topic 6: LENGTH

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
1. Add and subtract length.	Pupils demonstrate addition and subtraction of lengths using number sentences in the conventional manner.	(i) Add units of length, involving conversion of units in; <ul style="list-style-type: none"> <li>○ millimetre,</li> <li>○ metre and centimetre,</li> <li>○ centimetre and millimetre.</li> </ul> (ii) Subtract units of length, involving conversion of units in; <ul style="list-style-type: none"> <li>○ millimetre,</li> <li>○ metre and centimetre</li> <li>○ centimetre and millimetre</li> </ul>	Give answers in mixed decimals to 2 decimal places.	add plus total subtract minus difference altogether convert mixed decimal multiply product divide divisor
2. Multiply and divide length.	Pupils demonstrate multiplication and division using number sentences in the conventional manner.	(i) Multiply units of length, involving conversion of units, by; <ul style="list-style-type: none"> <li>○ a one-digit number,</li> <li>○ 10, 100, 1000.</li> </ul> (ii) Divide units of length, involving conversion of units, by; <ul style="list-style-type: none"> <li>○ a one-digit number;</li> <li>○ 10, 100, 1000.</li> </ul>	Limit division exercises to quotients without remainders.	multiplicand estimate estimation

# Topic 6: LENGTH

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
	<p>Pupils construct problems from a given number sentence involving measurement of length, for example,            “How many 25 cm ribbons can you cut from a strip of 2 metres in length?”</p>  <p><math>\square = 2 \text{ metres} \div 25 \text{ centimetres}</math></p>	<p>(iii) Solve problems involving basic operations on length.</p>	<p>Apply the four step approach when solving problems.            Practice mental calculations and estimations when solving problems involving length.            Make sensible estimation to check answers.</p>	

# Topic 7: MASS

LEARNING OBJECTIVES	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE	VOCABULARY
<i>Pupils will be taught to...</i>		<i>Pupils will be able to...</i>		
Measure mass using standard units.	Pupils measure, read and record masses of objects in kilograms and grams using weighing scale.	<ul style="list-style-type: none"> <li>(i) Measure of masses using in units of kilogram and gram.</li> <li>(ii) Read measurement of masses to the nearest scales division of kilograms and grams.</li> <li>(iii) Estimate the masses of objects using kilograms and grams.</li> </ul>	<p>Emphasise that measuring should start from the '0' mark of the weighing scale.</p> <p>Encourage pupils to check for accuracy of estimations.</p>	<p>read weighing scale divisions</p> <p>weight weigh compare record Compound</p>

# Topic 7: MASS



LEARNING OBJECTIVES	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE	VOCABULARY
<i>Pupils will be taught to...</i>		<i>Pupils will be able to...</i>		
<p>Understand the relationship between units of mass.</p>	<p>Pupils construct tables of relationship between units of mass.</p> <p>Pupils use conversion tables to convert from one unit of mass to another.</p>	<p>(i) Convert units of mass from</p> <ul style="list-style-type: none"> <li>○ kilograms to grams,</li> <li>○ kilograms and grams to grams,</li> <li>○ kilograms and grams to kilograms.</li> </ul>	<p>Provide conversion exercises to emphasise the relationship</p> <p style="text-align: center;"><math>1 \text{ kg} = 1000 \text{ g}</math></p> <p>Practice mental calculations and limit answers to problems in mixed decimals up to two decimal places, for example</p> <ul style="list-style-type: none"> <li>• <math>3 \text{ kg } 200 \text{ g} = 3.2 \text{ kg}</math>,</li> <li>• <math>1 \text{ kg } 450 \text{ g} = 1.45 \text{ kg}</math>.</li> </ul>	<p>measurement</p> <p>relationship</p> <p>decimal point</p>

# Topic 7: MASS

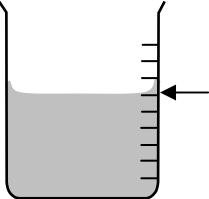
LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
1. Add and subtract involving units of mass.	<p>Pupils write number sentences in the horizontal or vertical form to represent calculations involving mass, for example  <math>3\text{kg } 450\text{ g} + 2\text{ kg } 310\text{ g} = ?</math></p> $\begin{array}{r} 3\text{ kg } 450\text{ g} \\ + 2\text{ kg } 310\text{ g} \\ \hline 5\text{ kg } 760\text{ g} \end{array}$ <p><math>5\text{ kg } 760\text{ g} = 5.76\text{ kg}</math></p> $\begin{array}{r} 3\text{ kg } 450\text{ g} \\ + 2\text{ kg } 310\text{ g} \\ \hline 5\text{ kg } 760\text{ g} \end{array} \quad \begin{array}{r} 3.45\text{ kg} \\ + 2.31\text{ kg} \\ \hline 5.76\text{ kg} \end{array}$	<p>(i) Add mass involving units of mass in;</p> <ul style="list-style-type: none"> <li>○ kilograms,</li> <li>○ grams,</li> <li>○ kilograms and grams.</li> </ul> <p>(ii) Subtract mass involving units of mass in;</p> <ul style="list-style-type: none"> <li>○ kilograms,</li> <li>○ grams,</li> <li>○ kilograms and grams.</li> </ul>	<p>Request answers to calculation involving mass in mixed decimals to two decimal places.</p> <p>Have pupils to practice mental calculations and verify answers by calculating in the conventional manner.</p>	<p>convert mixed decimals total subtract minus altogether sum difference heavy total weight weighs</p>
2. Multiply and divide units of mass.	$\begin{array}{r} 3\text{ kg } 450\text{ g} \\ \times \quad 3 \\ \hline 9\text{ kg } 1350\text{ g} \\ \hline 10\text{ kg } 350\text{ g} \end{array}$ <p><math>10\text{ kg } 350\text{ g} = 10.35\text{ kg}</math></p> <p>Pupils divide using the long division technique.</p>	<p>(iii) Multiply mass involving conversion of units, with</p> <ul style="list-style-type: none"> <li>○ a one-digit number,</li> <li>○ 10, 100, 1000.</li> </ul> <p>(iv) Divide mass involving conversion of units :</p> <ul style="list-style-type: none"> <li>○ one-digit number,</li> <li>○ 10, 100, 1000.</li> </ul>	<p>Limit division exercises involving mass with quotients without remainders.</p> <p>Make sensible estimations of quotients before dividing.</p>	<p>multiply product multiplicand</p> <p>divide divisor remainders</p>



# Topic 7: MASS

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
	<p>Pupils pose problems from a given number sentence involving mass, for example</p> <p><input type="text"/> = 2 kg ÷ 400 gram packets</p> <div style="display: flex; justify-content: center; align-items: center; gap: 20px;">   </div> <p>“How many 400 gram packets of sugar can be made from 2 kg of sugar?”</p>	<p>(v) Solve problems involving basic operations with mass.</p>	<p>Apply the four step approach when solving problems.</p> <p>Practice mental calculations and estimations when solving problems involving mass.</p> <p>Make sensible estimation to check answers.</p>	

# Topic 8: VOLUME OF LIQUID

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Measure and compare volume of liquid using standard units.</p>	<p>Pupils measure, read and record volume of liquid in litres and millilitres using beakers, measuring cylinders, etc.</p> <p>Estimate volume of liquid by halving or doubling techniques.</p>	<p>(i) Read measurement of volume of liquid in litres and millilitres.</p> <p>(ii) Write measurement of volume of liquid to the nearest scales of tenth division for</p> <ul style="list-style-type: none"> <li>o litre,</li> <li>o millilitre.</li> </ul> <p>(iii) Measure and record the volume of liquid in litres and millilitres.</p> <p>(iv) Estimate the volume of liquid in litres and millilitres.</p>	<p>Capacity is the amount of substance a container can hold. Emphasise that the correct reading for the measurement of volume of liquid using a measuring cylinder is where the scale is in line with the bottom of the meniscus.</p> 	<p>read meniscus record capacity measuring cylinder water level beaker measuring jug divisions</p>

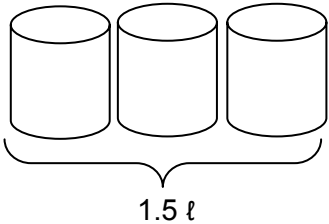
# Topic 8: VOLUME OF LIQUID

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
Understand the relationship between units of volume of liquid.	<p>Pupils construct tables of relationship between units of volume of liquid.</p> <p>Pupils use conversion tables to convert from one unit of volume to another.</p>	<p>(i) Convert units of volume, from</p> <ul style="list-style-type: none"> <li>○ litres to millilitres,</li> <li>○ millilitres to litres,</li> <li>○ litres and millilitres to litres,</li> <li>○ litres and millilitres to millilitres.</li> </ul>	<p>Emphasise relationships.</p> $1\ell = 1\,000\text{m}\ell$ <p>Practice mental calculations.</p> <p>Emphasise answers in mixed decimals up to two decimal places, for example</p> <ul style="list-style-type: none"> <li>• <math>5.8 = 5\,800\text{m}\ell</math></li> <li>• <math>2\ell\,500\text{m}\ell = 2.5\ell</math></li> <li>• <math>3\ell\,520\text{m}\ell = 3.52\ell</math></li> <li>• <math>4\ell\,250\text{m}\ell = 4.250\text{m}\ell</math></li> </ul>	measurement relationship

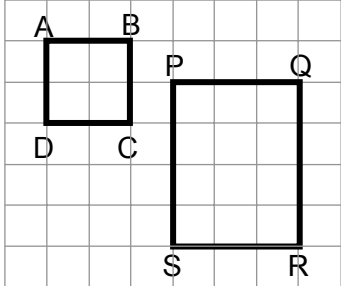
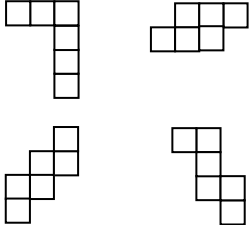
# Topic 8: VOLUME OF LIQUID

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
1. Add and subtract units of volume.	<p>Pupils write number sentences in the horizontal or vertical form to represent calculations involving volume of liquid, for example:</p> $3 \text{ l } 450 \text{ ml} + 2 \text{ l } 310 \text{ ml} = 5.76 \text{ l}$ $\begin{array}{r} 3 \text{ l } 450 \text{ ml} \\ + 2 \text{ l } 310 \text{ ml} \\ \hline 5 \text{ l } 760 \text{ ml} \end{array}$ $5 \text{ l } 760 \text{ ml} = 5.76 \text{ l}$ $\begin{array}{r} 3 \text{ l } 450 \text{ ml} \\ + 2 \text{ l } 310 \text{ ml} \\ \hline 5 \text{ l } 760 \text{ ml} \end{array}$ $\begin{array}{r} 3.45 \text{ ml} \\ + 2.31 \text{ ml} \\ \hline 5.76 \text{ ml} \end{array}$	<p>(i) Add volume of liquid involving conversion of units in;</p> <ul style="list-style-type: none"> <li>○ litre,</li> <li>○ millilitre,</li> <li>○ litre and millilitre.</li> </ul> <p>(ii) Subtract volume of liquid involving conversion of units in :</p> <ul style="list-style-type: none"> <li>○ litre,</li> <li>○ millilitre,</li> <li>○ litre and millilitre.</li> </ul>	<p>Give answers in mixed decimals to 2 decimal places.</p> <p>Practice mental calculations and verify answers by conventional calculation.</p>	<p>convert</p> <p>mixed decimals</p> <p>total</p> <p>subtract</p> <p>minus</p> <p>altogether</p> <p>sum</p>
2. Multiply and divide units of volume.	<p>Pupils demonstrate division of volume of liquid in the conventional manner.</p>	<p>(i) Multiply volume of liquid involving conversion of units by :</p> <ul style="list-style-type: none"> <li>○ a one-digit number,</li> <li>○ 10, 100, 1000.</li> </ul> <p>(ii) Divide volume of liquid involving conversion of units by:</p> <ul style="list-style-type: none"> <li>○ a one-digit number,</li> <li>○ 10, 100, 1000.</li> </ul>	<p>Limit division without remainders.</p> <p>Estimate volume of liquid from a given situation.</p>	<p>multiply</p> <p>product</p> <p>divide</p> <p>divisor</p> <p>multiplicand</p>

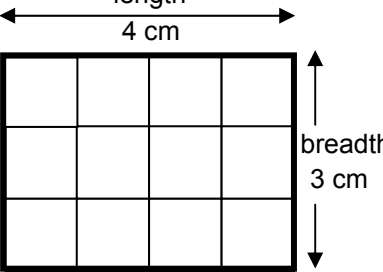
# Topic 8: VOLUME OF LIQUID

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
	<p>Pupils construct problems for conversion of units from a given measurement of volume, for example:</p>  <p>There are three empty glasses to be filled with milk, 1.5 litres in total. How much milk can each glass hold?</p>	<p>(iii) Solve problems involving volume of liquids.</p>	<p>Apply the four step approach when solving problems.</p> <p>Practice mental calculations and estimations when solving problems involving volume of liquid.</p> <p>Make sensible estimation to check answers.</p>	

# Topic 9: SHAPE AND SPACE

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>1. Understand the perimeter of a two-dimensional shape.</p>	<p>Pupils draw a square, a rectangle and a triangle and describe the features of the shapes.</p> <p>Pupils measure the perimeter of given shapes using suggested measuring tools, for example, a thread or string and a ruler.</p>	<p>(i) Identify the sides of a:</p> <ul style="list-style-type: none"> <li>○ square,</li> <li>○ rectangle,</li> <li>○ triangle.</li> </ul> <p>(ii) Measure and record the perimeter of a:</p> <ul style="list-style-type: none"> <li>○ square,</li> <li>○ rectangle,</li> <li>○ triangle.</li> </ul>	<p>A square and a rectangle, each has four sides. A triangle has three sides.</p> <p>Verify that the perimeter of the shapes: a square, a rectangle or a triangle is equal to the sum of the length of its sides.</p>	<p>length breadth perimeter area</p>
<p>2. Understand the area of a two-dimensional shape.</p>	<p>Pupils draw a square and a rectangle and label the lengths and breadths of the shapes.</p> <p>Pupils build various shapes with equal number of square tiles.</p> <p>Pupil compare using a grid paper, for example:</p> <p>The area of square ABCD is 4 square units. The area of rectangle PQRS is 12 square units.</p> 	<p>(i) Identify the dimensions of a:</p> <ul style="list-style-type: none"> <li>○ square,</li> <li>○ rectangle.</li> </ul> <p>(ii) Compare with unit squares the size of a:</p> <ul style="list-style-type: none"> <li>○ rectangle,</li> <li>○ square.</li> </ul>	<p>Use a small square tile as a unit square. The figures have different shapes but they have the same size.</p>  <p>The area of each figure is 6 square units.</p> <p>Verify that the area (the number of unit squares) for a square or rectangle is the product of its dimensions.</p>	

# Topic 9: SHAPE AND SPACE

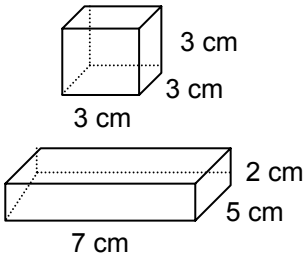
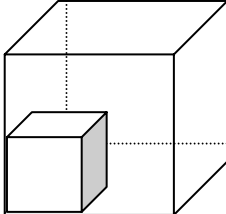
LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY																
	<p>Pupils use rulers to measure the dimensions of squares and rectangles.</p>	<p>(iii) Measure and record the dimensions of squares and rectangles.</p>	<p>Tabulate measurements of dimensions and their product, for example:</p> <table border="1" data-bbox="1377 422 1780 635"> <thead> <tr> <th>Shape</th> <th>Length (cm)</th> <th>Breadth (cm)</th> <th>L x B (square cm)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>4</td> <td>4</td> <td>16</td> </tr> <tr> <td>B</td> <td>6</td> <td>5</td> <td>30</td> </tr> <tr> <td>C</td> <td>3</td> <td>6</td> <td>18</td> </tr> </tbody> </table>	Shape	Length (cm)	Breadth (cm)	L x B (square cm)	A	4	4	16	B	6	5	30	C	3	6	18	
Shape	Length (cm)	Breadth (cm)	L x B (square cm)																	
A	4	4	16																	
B	6	5	30																	
C	3	6	18																	
<p>3. Find the area and perimeter two-dimensional shapes.</p>	<p>Pupils calculate area using the formula: Area = length x breadth</p>  <p>Area of rectangle = 4 cm x 3 cm = 12 cm<sup>2</sup></p>	<p>(i) Calculate the perimeter of squares and rectangles. (ii) Calculate the area of squares and rectangles.</p>	<p>The square centimetre and square metre are the units of area. cm<sup>2</sup> stands for square centimetre. m<sup>2</sup> stands for square metre. Limit shapes to squares and rectangles only.</p>	<p>square centimetre (cm<sup>2</sup>) square metre (m<sup>2</sup>)</p>																

# Topic 9: SHAPE AND SPACE

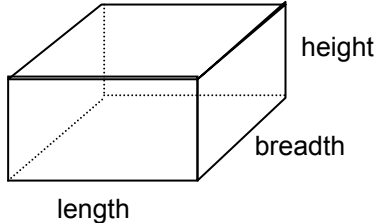
LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
	<p>Pupils create stories about perimeters or areas from given number sentences</p> <p>Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(iii) Solve problems involving perimeter and area of two-dimensional shapes.</p>	<p>Apply the four step approach when solving problems.</p> <p>Practice mental calculations and estimations when solving problems involving perimeter and area.</p> <p>Make sensible estimation to check answers.</p>	



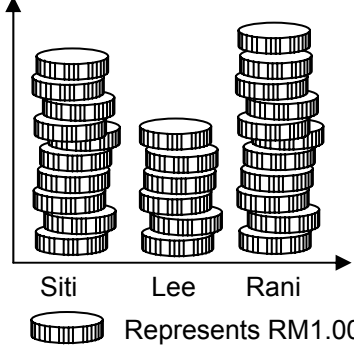
# Topic 9: SHAPE AND SPACE

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>1. Understand the volume for cubes and cuboids.</p>	<p>Pupils draw three-dimensional shapes of cubes and cuboids from given measurements, for example:</p>  <p>Pupils draw nets of cuboids from a given set of measurements and build cuboids. Label the dimensions of the cuboids constructed.</p> <p>Explore volume of cuboids using units of small cubes.</p>  <p>Eight small cubes fit into one big cube, so the volume of the big cube is 8 cubic units.</p>	<p>(i) Identify the dimensions of cubes and cuboids.</p> <p>(ii) Compare with a unit cube:</p> <ul style="list-style-type: none"> <li>○ cuboid</li> <li>○ cube</li> </ul> <p>(iii) Measure and record the dimensions of cubes and cuboids.</p>	<p>Limit three-dimensional shapes to cubes and cuboids only.</p> <p>The dimensions of cubes or cuboids are length, breadth and height.</p> <p>Use small cubes as unit cube.</p> <p>State volume of a big cube in the total numbers of small unit cubes.</p> <p>Verify that the volume of a cube or cuboid is the product of its dimensions.</p> <p>Tabulate the measurements of dimensions of cubes and cuboids and find their product.</p>	<p>volume cubic unit formula height</p>

# Topic 9: SHAPE AND SPACE

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p><b>2.</b> Find the volume for cubes and cuboids.</p>	<p>Pupils calculate volume using the formula: Volume = length x breadth x height</p>  <p>Pupils create stories about volume of cubes and cuboids from given number sentences Pose to pupils, daily problems in the form of words, tables and pictorials.</p>	<p>(i) Calculate the volume of cubes and cuboids.</p> <p>(ii) Solve problems involving volume of cubes and cuboids.</p>	<p>The standard unit for volume is the cubic metre (m<sup>3</sup>). A smaller unit for volume is the cubic centimetre (cm<sup>3</sup>).</p> <p>Apply the four step approach when solving problems. Practice mental calculations and estimations when solving problems involving volume of cubes and cuboids. Make sensible estimation to check answers.</p>	<p>height breadth length volume</p>

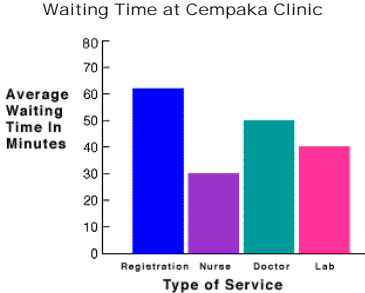
# Topic 10: DATA HANDLING

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Use pictographs to read and display data.</p>	<p>Teacher shows a pictograph and pupils talk about the pictograph, for example:</p> <p><b>Pocket Money Saved by Pupils in a Week</b></p>  <p>Teacher guides pupils to extract and interpret information from pictographs by posing appropriate questions.</p> <p>Teacher provides information in tabular form, pupils transform the information into pictographs.</p>	<p>(i) Describe a pictograph featuring</p> <ul style="list-style-type: none"> <li>○ the picture used to represent data,</li> <li>○ the title of the graph,</li> <li>○ what the axes represent,</li> <li>○ What one unit of picture represent.</li> </ul> <p>(ii) Extract and interpret information from pictographs.</p> <p>(iii) Construct pictographs to illustrate given information.</p>	<p>Allow pupils to create stories from the pictographs shown to them.</p> <p>Involve counting activities to show numbers or quantities, making comparison and finding the total quantity.</p> <p>Use these steps when constructing pictographs.</p> <ul style="list-style-type: none"> <li>• Determine what the horizontal axis and vertical axis represent.</li> <li>• Use one number or the same symbol to represent one unit or more.</li> <li>• Write heading of the pictograph.</li> <li>• Ensure that a key is present.</li> </ul> <p>Limit to 5 columns or rows.</p>	<p>key quantity</p>

# Topic 10: DATA HANDLING

LEARNING OBJECTIVES	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE	VOCABULARY
<i>Pupils will be taught to...</i>		<i>Pupils will be able to...</i>		
	Pose to pupils, daily problems in the form pictographs from sources such as magazines, newspapers, etc.	(iv) Solve a given problem by organising and interpreting numerical data in pictographs.	<p>Emphasise five aspects in handling data:</p> <ul style="list-style-type: none"> <li>• specifying the problem;</li> <li>• planning the data to be collected and the analysis to be carried out;</li> <li>• collecting the data in a variety of ways, for example through surveys or using prepared sources of data;</li> <li>• processing and representing the data;</li> <li>• interpreting and discussing the results.</li> </ul> <p>Many children collect information and draw graphs without the understanding of the purpose. Provide children with opportunities to:</p> <ul style="list-style-type: none"> <li>• formulate and clarify questions,</li> <li>• interpret a range of graphs and charts, especially those from secondary sources, e.g. magazines, newspapers, etc;</li> <li>• interpret and analyse data in ways that foster speculation</li> <li>• justify interpretations, analyses and conclusions.</li> </ul> <p>Keep a balance across the five aspects of data handling.</p>	

# Topic 10: DATA HANDLING

LEARNING OBJECTIVES <i>Pupils will be taught to...</i>	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES <i>Pupils will be able to...</i>	POINTS TO NOTE	VOCABULARY
<p>Use bar graphs to read and display data.</p>	<p>Teacher shows a bar graph and pupils talk about the bar graph, for example:</p>  <p>A bar graph titled "Waiting Time at Cempaka Clinic". The vertical axis is labeled "Average Waiting Time in Minutes" and ranges from 0 to 80 in increments of 10. The horizontal axis is labeled "Type of Service" and has four categories: Registration, Nurse, Doctor, and Lab. The bars are colored blue, purple, teal, and pink respectively. The values are approximately: Registration (65), Nurse (30), Doctor (50), and Lab (40).</p>	<p>(i) Describe a bar graph featuring</p> <ul style="list-style-type: none"> <li>○ the title of the graph,</li> <li>○ what the axes represent,</li> </ul>	<p>Allow pupils to create stories from the bar graphs shown to them.</p> <p>Bars representing data are sometimes presented horizontally, hence is called the horizontal bar graph.</p>	<p>bar graph axis horizontal axis vertical axis</p>
	<p>Teacher guides pupils to extract and interpret information from bar graphs by posing appropriate questions.</p> <p>Teacher provides information in tabular form, pupils transform the information into bar graphs.</p>	<p>(ii) Extract and interpret information from bar graphs.</p> <p>(iii) Construct bar graphs to illustrate given information.</p>	<p>Involve counting activities to show numbers or quantities, making comparison and finding the total quantity.</p> <p>Use these steps when constructing bar graphs.</p> <ul style="list-style-type: none"> <li>• Determine what the horizontal axis and vertical axis represent.</li> <li>• Write title of the graph.</li> </ul> <p>Limit to 5 columns or rows.</p>	

# Topic 10: DATA HANDLING

LEARNING OBJECTIVES	SUGGESTED TEACHING AND LEARNING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE	VOCABULARY
<i>Pupils will be taught to...</i>	Pose to pupils, daily problems in the form bar graphs from sources such as magazines, newspapers, etc.	<i>Pupils will be able to...</i>	Emphasise five aspects in handling data: <ul style="list-style-type: none"> <li>• specifying the problem;</li> <li>• planning the data to be collected and the analysis to be carried out;</li> <li>• collecting the data in a variety of ways, for example through surveys or using prepared sources of data;</li> <li>• processing and representing the data;</li> <li>• interpreting and discussing the results.</li> </ul> Keep a balance across the five aspects of data handling.	