

Stage 3 Maths Program

Term 2 Week 1

NSW K-10 Mathematics Syllabus Outcomes

Addition and Subtraction (1)

MA3-5NA – Selects and applies appropriate strategies for addition and subtraction with counting numbers of any size

- Select and apply efficient mental, written and calculator strategies for addition and subtraction of numbers of any size
- Use estimation to check answers to calculations

3D Space (1)

MA3-14MG – Identifies three-dimensional objects, including prisms and pyramids, on the basis of their properties, and visualises, sketches and constructs them given drawings of different views

- Connect three-dimensional objects with their nets

Working Mathematically

- MA3-1WM - Describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions
- MA3-2WM - Selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations
- MA3-3WM - Gives a valid reason for supporting one possible solution over another

Assessment

SENA 3 and 4 if you haven't completed in Week 1 and 2

Use SENA 1 and 2 if needed - IEP for these students

Learning Goal - Addition and Subtraction (refer to outcome)

Success Criteria - Addition and Subtraction (refer to indicators)

TIB -

Learning Goal - 3D Space (refer to outcome)

Success Criteria -3D Space (refer to indicators)

TIB -

Homework - None this week

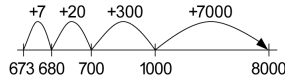
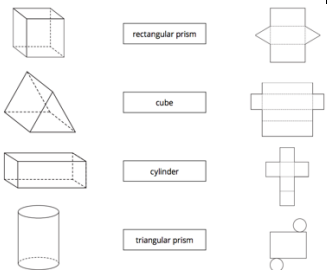
Mathematics Weekly Plan

Term – 1 2 3 4 Week – 1 2 3 4 5 6 7 8 9 10 11 Strands – Addition and Subtraction (1)/ 3D Space (1)

		Monday	Tuesday	Wednesday	Thursday	Friday
Key Ideas:		Whole Number			3D Space	
Warm Up			Mark tests as whole class – <i>provide instant feedback</i>	Ninja Numeracy	Five Minute Frenzy – Practice Time tables – <i>Individual goals</i>	Ninja Numeracy
Problem of the Day		Staff Developmental Day	<p>Pre-Test: Addition & Subtraction/ 3D Space (nets)</p>	<p><i>To water her crops, a farmer used 418 gallons of water from a river. In addition, she used 584 gallons from a well. In all, about how many gallons of water did she use? Choose the better estimate.</i></p> <p>1,000 700</p>	<p><i>An oil spill washed up on the coast and coated a total of 331 birds with oil. So far, a team of volunteers has cleaned 128 birds. About how many more birds do the volunteers need to clean? Choose the better estimate.</i></p> <p>1,200 200</p>	<p>Post Test: Addition & Subtraction/ 3D Space (nets)</p>

Main Focus + Language

		<ul style="list-style-type: none"> • Revision: Mental Strategies for Addition using Estimation: Explain to students that we use estimation and rounding to check the reasonableness of answers to calculations. Example: use estimation to check the reasonableness of answers to addition and subtraction calculations, e.g. $1438 + 129$ is about $1440 + 130$. • View the following YouTube video and discuss with students. Display a variety of sums on the board to model how to further estimate. https://www.youtube.com/watch?v=qr-xHNNrZeA Examples to model to the closest 10 and 100: Ten: $394 + 661 = 390 + 660$ $872 + 312 = 870 + 310$ $265 + 233 = 270 + 230$ – note: numbers from 5 and up, numbers will need to be rounded to the next 10. Hundred: $422 + 178 = 400 + 200 = 600$ $588 + 192 = 600 + 200 = 800$ $147 + 679 = 100 + 700 = 800$ Split strategy: This mental strategy is splitting both numbers into parts before adding together. Example: $57 + 49$ Step 1: estimate by adding numbers to the nearest 10 = $60 + 50 = 110$ – our answer is estimated around 110. Now continue to use the mental strategy. Step 2: $50 + 40 = 90$ Step 3: $90 + 7 = 97$ (adding 7 from 57) Step 4: $97 + 9 = 106$ (adding 9 from 49). Our overall answer is 106 and our estimation was 110. Our estimation was reasonable as we were close. Compensation Strategy: This strategy requires you to add too much and then take away the difference. 	<ul style="list-style-type: none"> • Review mental strategies for subtraction using estimation: • Revise estimation as a whole class. $893 + 352 = 890 + 350$ $549 + 482 = 550 + 480$ $876 + 389 = 880 + 390$ $871 + 393 = 900 + 400$ $526 + 624 = 500 + 600$ $124 + 237 = 100 + 200$ Explicitly model examples involving subtraction: $8736 - 2672 = 8700 - 2700$ $936 - 243 = 940 - 240$ $77 - 26 = 80 - 30$ Split Strategy: $76 - 34$ Step 1: estimation: $80 - 30 = 50$ Step 2: $70 + 6 - 30 + 4$ Step 3: $70 - 30 = 40$ Step 4: $6 - 4 = 2$ Step 5: $40 + 2 = 42$ Additional Compensation Strategy: $67 - 37$ Step 1: estimation: $70 - 40 = 30$ Step 2: Round 37 to the next multiple of 10 which is 40 ($37 + 3 = 40$) Step 3: $67 - 40 = 27$ Step 4: $27 + 3 = 30$ (We added 3 to make 40, so we took away too much. Now we need to add the 3 to get the correct answer.) Jump Strategy: $87 - 34 =$ Step 1: estimation = $90 - 30 = 60$ Model using on board using blank number line = 53 	<ul style="list-style-type: none"> • Revision of 3D shapes: Define 3 Dimensional shapes and discuss meaning with students: 3D shapes: 3D shapes have faces (sides), edges and vertices (corners). A 3D shape is described by its edges, faces, and vertices (vertex is the singular form of vertices). The exception is the sphere which has no edges or vertices. Polyhedron: A polyhedron is a 3D shape that has flat faces and straight edges. A regular polyhedron is a 3D shape with all of its faces the same size and shape. Using a 3D object from the classroom e.g. tissue box, model the following as students take notes. Faces: Faces are the flat sides on a shape. Edges: Are the lined where two faces meet. Vertices: Are the corners of a 3D shape, where three or more edges meet. • Briefly view the differences between prisms and pyramids. Explain that this will enable students to decipher which net certain 3D shapes belong to e.g. meet at a point would be a pyramid: https://www.slideshare.net/hannah126/primary-differences-between-prisms-and-pyramids • 3D shape Nets: A net is a two-dimensional plan or shape that can be folded to make a three-dimensional solid. For some solids, such as the cube, there are many different nets. Some 3D shapes, like cubes and pyramids, can be opened out and unfolded into a flat shape. The unfolded shape is called the net of the solid. View following PowerPoint and YouTube clip and encourage students to sketch and label the nets in their books. http://www.primaryresources.co.uk/maths/powerpoint/3d_shapes_nets.ppt https://youtu.be/SwDjm6Ra1W4 • Place an activity similar to the image below where students 	<ul style="list-style-type: none"> • As a whole class discuss prisms and pyramids; brainstorm what elements make a prism. A prism has two ends that are exactly the same size and shape. • A prism has two opposite ends that are parallel to each other. • A pyramid has triangular sides which and a base which is flat and can be either square or triangular. • A pyramid has triangular sides which meet at one point called an 'apex' to describe the highest point above the base of a pyramid or cone. • Display a range of nets on the board or have them pre-cut out. Encourage students to write the names on a whiteboard and hold up to assess students' knowledge and understanding of the 3D nets. • As a whole class, students complete the following worksheet and mark together and glue in books. https://www.math-salamanders.com/image-files/3d-shapes-worksheets-find-the-nets-1.gif • Additional resources: http://www.bbc.co.uk/bitesize/ks3/maths/shape_space/3d_shapes/revision/3/ 	
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			<p>Example: $78 + 36$ Step 1: estimation: $80 + 40 = 120$. Step 2: Round 8 to the next multiple of 10 which is 80 ($78 + 2 = 80$) Step 2: $80 + 30 = 110 + 6$ (from 36) = 116 Step 3: $116 - 2 = 114$ (We added 2 to 78 to make 80, so now we must take the 2 away to get the correct answer.)</p> <p>Jump Strategy: The jump strategy is a mental strategy that adds the second number in stages. It can be used on an empty number line to count up rather than back. $673 + 7327$</p>  <p>Step 1: estimation:</p>		<p>demonstrate their learning by matching the shape with the correct name and net.</p> 	
Group Activities	Revision Group - Names		<p>Work with these students to complete a range of addition problems to continue modelling estimation. Students to complete the following activity sheet. https://www.teacherspayteachers.com/Product/Rounding-Numbers-and-Estimating-Sums-345403</p>	<p>Work with these students to complete a range of subtraction problems to continue modelling estimation.</p>	5/6M Town Groups Based on Continuum Clusters	<p>Have pre-cut 3D net shapes and work with the students to fold and identify what each net creates. Students sketch the nets into their books and label the properties of the shapes. Encourage students to identify which shapes a prisms and pyramids.</p>

Group Activities	Middle Group- Names		Rounding and estimation task cards. Students answer questions in work book and mark after a 10-15-minute session. Students must also use mental strategy to find exact answers to questions e.g. split strategy etc. https://www.teacherspayteachers.com/FreeDownload/FR-EE-Estimation-and-Rounding-Task-Card-Set-of-20-Task-Cards-1412081	Estimation using subtraction. http://www.math-aids.com/cgi/pdf_viewer_9.cgi?script_name=est_sum_diff_3_horiz.pl&p_type=1&p_round=0&ex_work=0&language=0&memo=&answer=1&x=99&y=22	5/6M Town Groups Based on Continuum Clusters	Students choose a net at random and cut it out. Students will then get a colored piece of paper and re-sketch the net using a ruler. Students will write the properties of their shape and the net they previously cut out, students will glue the sides and create the shape and glue it onto the colored sheet. These will be displayed in the room.
Group Activities	Main Group – Names		Students independently complete addition estimation word problems (up to 4 digits). Mark after session. http://www.math-aids.com/cgi/pdf_viewer_9.cgi?script_name=word_sum_diff_4digit.pl&p_type=0&p_round=0&language=0&memo=&answer=1&x=133&y=37	Students independently complete subtraction estimation word problems (up to 4 digits). Mark after session. http://www.math-aids.com/cgi/pdf_viewer_9.cgi?script_name=word_sum_diff_4digit.pl&p_type=1&p_round=0&language=0&memo=&answer=1&x=76&y=27	5/6M Town Groups Based on Continuum Clusters	<p>Which Face? Stage: 3 Short</p>  <p>The students create this net and fold it into a cube. It is placed on a table with the face  on top. Students work out which face is at the bottom?</p> <p>In this challenge, the students need to create and measure a net that when placed together, makes a correctly proportioned and enclosed cube. https://nrich.maths.org/13670</p>
Feedback/ Exit Slip	<p>Feedback – Use the thumb method after explicit modelling to determine students understanding and where they will be placed for group activities.</p> <p>Marking Exit Slips – Next to each students Exit Slip, the teacher will check students answers and will either write an: A = Achieved N/Y = Not Yet N/Y students will become your target group.</p>		<p>Answer addition questions using estimation:</p> <p>Revision: 67 + 38 84 + 29</p> <p>Middle: 378 + 274 834 + 987</p> <p>Main: 8637 + 9834 4264 + 5613</p>	<p>Answer subtraction questions using estimation:</p> <p>Revision: 76 – 53 98 – 25</p> <p>Middle: 872 – 637 413 – 522</p> <p>Main: 6374 – 3284 9728 – 6272</p>	Students write the differences between primes and pyramids.	Students sketch a 3D net of their choosing and label it on their exit slip.

Early Finishers/ Extension	<ul style="list-style-type: none"> • Students complete a range of addition and subtraction word problems using estimation first and then solving the actual answer using a mental or written strategy for practice. • Provide students with shopping catalogues OR allow use of their BYOD to shop for items within a specific budget. Students must calculate their expenses using estimation to see if they have enough money to purchase the items that they want to buy. 				<ul style="list-style-type: none"> • Students complete Middle Group Activity. • Students create 3D shapes using toothpicks, modelling clay, straws etc. Students will write the properties of their shape. • Students create OR play the who am I game using 3D shapes as their topic. E.g. I have 1 curved surface. I have no vertices. I have no opposite sides = sphere. • Students create an artwork using only 3D shapes. 	
Reflection/ Registration						