
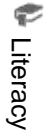









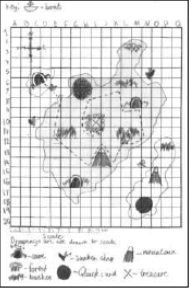






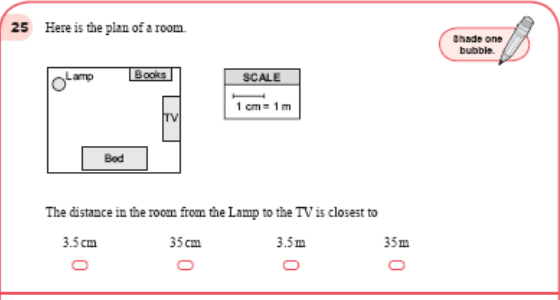



<h2>Position</h2>		
Stage 3 Outcome		
<p>A student:</p> <ul style="list-style-type: none"> › describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions MA3-1WM › locates and describes position on maps using a grid-reference system MA3-17MG 	<p>Language: Students should be able to communicate using the following language: position, location, map, plan, street directory, route, grid, grid reference, legend, key, scale, directions, compass, north, east, south, west, north-east, south-east, south-west, north-west.</p>	
Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date LAC/Icons
<h3 style="color: #f1c40f;">Ignition Activity</h3>		
<p>Google Maps Students access 'Google maps' via the internet or as a whole class on an interactive whiteboard. Explore the website. http://maps.google.com.au/maps?hl=en&tab=wl Explore Earth and Satellite. Zoom in and out keeping an eye on scale. View street level and icons. Get directions to a known location.</p>		 Information and communication technology capability
<p>The Best Route Students are given a scaled map of their suburb or a section of a city and are asked to locate two points of interest. On the map, students show the shortest or best route between the two points. Students write a description of the route using grid references, compass directions and the approximate distance travelled. <i>Variation:</i> On a large map of the local area, all students plot their home and the route they use to get to school. They then write a description of their route.</p>		 Literacy
<h3 style="color: #f1c40f;">Explicit Mathematical Teaching</h3>		
<p>At this Stage, a range of mapping skills could be further developed that include the interpretation of scales and simple calculations to find the actual distance between locations on a map. This topic links to Human Society and Its Environment (HSIE). These skills could be used to explore the sizes of other countries relative to Australia.</p>		 Literacy

<p>The word 'scale' has different meanings in different contexts. Scale could mean the enlargement or reduction factor for a drawing, the scale marked on a measuring device or a fish scale.</p> <p>Students need to learn about</p> <ul style="list-style-type: none"> • finding a place on a map or in a directory, given its grid references • using a given map to plan or show a route eg route taken to get to the local park • drawing and labelling a grid on a map • recognising that the same location can be represented by maps or plans using different scales • using scale to calculate the distance between two points on a map • locating a place on a map which is a given direction from a town or landmark eg locating a town that is north-east of Broken Hill • drawing maps and plans from an aerial view 		
<p>Whole Class Teaching and Learning Activities</p>		
<p>Orienteering</p> <p>Students design and measure a simple orienteering course in the school grounds. They create a set of instructions on a map with a grid, a scale and compass directions to each place to be located. They give their instructions to another student to follow.</p>		<p>Literacy Critical and creative thinking</p>
<p>Distance and Direction</p> <p>Students use the scale on a map of NSW and the compass rose to find a town eg 300 km NE of Broken Hill, 270 km SW of Ballina. Students are encouraged to create their own cards with distance, direction and starting place on one side and the town on the back. They then swap cards with other students in the class.</p> <p><i>Variation:</i> Students source maps on the Internet and write a new set of cards using direction, distance and starting point. They swap with a partner who locates the town or point of interest.</p>		<p>Literacy Critical and creative thinking</p>
<p>Degrees and Robots</p> <p>Students start by facing north and then are instructed to face east. Possible questions include:</p> <ul style="list-style-type: none"> ■ what angle have you turned through? ■ how many degrees is this? <p>Students are encouraged to discuss the angles between other compass points. Students could use this knowledge to play 'Robots'. In pairs, students label grid paper using the same coordinates and a scale. Student A gives directions while Student B is the robot eg Student A says 'Face East, go forward 3 paces, turn 90° to the right, go forward 4 paces, turn 180°, ...' At each instruction Student B tells Student A which direction they are facing. Student B draws the route onto their grid paper. Students compare routes.</p>		<p>Literacy Critical and creative thinking</p>

<p>Enlarge Me/Reduce Me Students are given a simple map, with a scale, covered by a two-centimetre grid. On a separate piece of paper they draw a four-centimetre grid and copy the map. They then draw a one centimetre grid and copy the map. Possible questions include:</p> <ul style="list-style-type: none"> ■ did doubling/halving the size of the grid double/halve the scale? Why? ■ did doubling/halving the size of the grid double/halve the size of the map? Why? ■ how could you use this method to enlarge/reduce a smaller section of the map? 		 Literacy  Critical and creative thinking
<p>Aerial Photo The teacher sources photographs of the local area from the Department of Lands. Students examine the aerial photographs. Possible questions include:</p> <ul style="list-style-type: none"> ■ what natural features can you locate? ■ what man-made features can you see? ■ how do they look different? ■ are there any distinctive features eg rivers, valleys? <p>Students investigate who uses aerial photographs and why they are used. Students make a sketch of the aerial photographs, drawing main roads, buildings and distinctive features. They discuss and annotate their sketches. <i>Variation:</i> Teachers or students source aerial photographs of unfamiliar locations either from the Department of Lands or the Internet and repeat the activity.</p>		 Literacy  Critical and creative thinking
<p>Open Ended Questions/Investigations</p> <ul style="list-style-type: none"> • Find your school in a street directory or Google maps. Where could you go that is close to 1km away from the school? Note the children who use the scale provided to work this out. Are they able to use it confidently and correctly? • I want to go on a long bike trip. I want to ride at least 1000 km but not more than 1200 km. Where might I travel? The children need to use a detailed map with a scale rather than one with distances marked on it. They should justify their answers. They might like to discuss how they measured the distance along curved roads. • Redesign this classroom using the same furniture as we have already. Present your design on a map or plan drawn to scale. Children may like to use grid paper. Have them explain their designs to the class. It is important that the designs are functional. • Find a location on a map that is in a given direction from a town or landmark, eg locate a town that is north-east of Broken Hill. Describe the direction of one location relative to another, eg 'Darwin is north-west of Sydney' 		 Literacy  Information and communication technology capability  Critical and creative thinking  Aboriginal and Torres Strait Islander histories

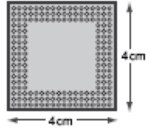
<ul style="list-style-type: none"> • Follow a sequence of two or more directions, including compass directions, to find and identify a particular location on a map • Use a map, street directory or online map to plan and show a route from one location to another, eg draw a possible route to the local park or use an Aboriginal land map to plan a route • Describe a route taken on a map using landmarks and directional language, including compass directions, eg 'Start at the post office, go west to the supermarket and then go south-west to the park' 🗺️ 		
<p>Guided Group/Independent Activities</p> <p>Treasure Island</p> <p>Students draw a 'Treasure Island' map, creating a scale and compass rose, and imposing a grid and coordinates. They write a set of directions, using compass points and grid coordinates, to the location of a hidden treasure on their map. Students exchange maps and follow the directions to find the treasure. They are encouraged to comment on the scale used.</p> <p><i>Variation:</i> Students could reproduce their maps on a computer.</p> 		<p>🗺️ Literacy 📖 Information and communication technology capability ⚙️ Critical and creative thinking</p>
<p>Paper Rounds</p> <p>In pairs, students are given a street directory of the local area. The teacher gives them the addresses of the places where they will start and finish their paper delivery and students use coordinates to find these places. They design a route for effective delivery of the papers and calculate the distance travelled using the scale.</p> <p>Possible questions include:</p> <ul style="list-style-type: none"> ■ how long is your route? ■ can you devise a shorter route? 		<p>🗺️ Literacy ⚙️ Critical and creative thinking</p>

<p>Follow My Directions Students work in pairs with a barrier between them, each with the same map of the school or local area. Student A marks two landmarks on the map and gives the grid references for one of these to Student B. Student A describes the route taken between the two landmarks using directions, distances and grid coordinates while Student B marks in the route on their map. Students compare their routes and discuss the appropriateness of the given instructions. Students can then swap roles and repeat the activity. Variation: Students could play Battleships on grid paper with coordinates.</p>		<p> Literacy  Critical and creative thinking</p>
<p>House Plans The teacher provides several examples of house plans. Students use the scale on the plans to determine the size of objects eg kitchen bench, living room, verandah. The teacher sources house plans and perspective drawings from a builder and makes cards for students to match. Students shuffle the cards and match each plan to the perspective drawings. Variations: Students could source plans off the Internet to compare and contrast different styles of houses and repeat the activity.</p>		<p> Information and communication technology capability  Critical and creative thinking</p>
<p>Spreadsheet Designs Students plot coordinates on a spreadsheet to create a picture or pattern. They write a list of instructions using coordinates that describes their picture or pattern. Another student uses the coordinates to reproduce the picture or pattern.</p>		<p> Literacy and creative thinking  Critical and creative thinking</p>
<p>Previous NAPLAN/BST Questions NAPLAN – Year 5-Question 25</p> 		<p> Information and communication technology capability</p>

NAPLAN Year 7-Question 12

12 A computer chip has dimensions 8 mm × 8 mm.
A scale drawing is shown below.

Shade one bubble.



What scale is used in the drawing?

- 1 cm represents 5 mm
- 1 cm represents 2 mm
- 2 cm represents 1 mm
- 5 cm represents 1 mm