



MEASUREMENT		Levels			
	2	3	4	5	6
9. Understand units and direct measure Students decide what needs to be measured and carry out measurements of length, capacity/volume, mass, area, time and angle to needed levels of accuracy.	M 9a.2 <i>Understand units</i> The student: Distinguishes the attributes of length, area, capacity and mass when comparing things and chooses something that relates well to the attribute of interest to use as units. M 9b.2 <i>Direct measure</i> The student: Compares directly and orders things by length, area, capacity, mass and time, compares indirectly lengths and capacities, and uses uniform units carefully to measure lengths and capacities.	M 9a.3 <i>Understand units</i> The student: Realises that using a uniform unit repeatedly to match an object gives a measure of the size of the object, and chooses suitable and uniform things to use as units and a common unit to compare two things. M 9b.3 <i>Direct measure</i> The student: Compares directly and indirectly and orders things by length, area, capacity, mass, time and angle, measures them by counting uniform units and uses standard scales to measure length and time.	M 9a.4 <i>Understand units</i> The student: Selects appropriate attributes, distinguishes perimeter from area, area from volume and time from elapsed time, and chooses units of a sensible size for the descriptions and comparisons to be made. M 9b.4 <i>Direct measure</i> The student: Measures area by counting uniform units, including part units where required, volume by counting cubes and length, mass, capacity, time and angle by reading whole-number scales.	M 9a.5 <i>Understand units</i> The student: Takes purpose and practicality into account when selecting attributes, units and instruments for measuring things and uses the relationship between metric prefixes to move between units. M 9b.5 <i>Direct measure</i> The student: Uses a range of whole number and decimal scales for measuring, including making measurements that are more accurate than the available scales allow.	M 9a.6 <i>Understand units</i> The student: Decides what measurements are needed in order to complete practical tasks and ensures that units used are consistent with each other and with any formula used. M 9b.6 <i>Direct measure</i> The student: Makes or collects measurements to planned levels of accuracy and integrates measurement information from several sources in order to complete practical tasks.
			m31w1 <i>MFWA1</i> m31w2 b 5D 6A 7C 7D 7E 7F m31w3 7G 8A 8B 8C 8G m31w4 m32w1 BC 1.2 p 80-82	m41w1 BC 1.2, p 71 m41w2 BC 2.3, p 11 m42w2 m42w3 <i>MFWA1</i> m42w4 a 5A b 6B m42w5 <i>MFWA2</i> m42w6 a 3A 3B 3C m9b4w1 m9b4w2	m52w1 <i>MFWA1</i> 5E 5F <i>MFWA2</i> a 3A 3B 3C b 6H 7A 7B
10. Indirect measure Students select, interpret and combine measurements, measurement relationships and formulae to determine other measures indirectly.	M 10.2 The student: Is working toward achieving Level 3.	M 10a.3 <i>Measurement relationships</i> The student: Understands and measures perimeter directly and uses straightforward arithmetic to determine perimeters, key elapsed time and other measurements which cannot be obtained directly. M 10b.3 <i>Scale</i> The student: Attends informally to scale when making and using plans, maps and models.	M 10a.4 <i>Measurement relationships</i> The student: Understands elapsed time and relationships involving the perimeter of polygons, the area of regions based on squares and the volume of prisms based on cubes, and uses these for practical purposes. M 10b.4 <i>Scale</i> The student: Understands and uses scale factors involving small whole numbers and unit fractions for straightforward tasks, including those that involve making figures and objects on grids and with cubes.	M 10a.5 <i>Measurement relationships</i> The student: Understands and applies directly circumference, length, area and volume relationships for polygons based on rectangles and rectangular prisms and circles and uses similarity and Pythagoras's Theorem to solve straightforward right triangles. M 10b.5 <i>Scale</i> The student: Understands and uses scale factors and the effect of scaling linear dimensions on lengths, areas and volumes of figures and objects produced on grids and with cubes.	M 10a.6 <i>Measurement relationships</i> The student: Understands and applies directly length, area and volume relationships for polygons and circles, spheres, prisms and pyramids. M 10b.6 <i>Scale</i> The student: Understands and uses similarity, including trigonometric ratios, and Pythagoras's Theorem to solve problems involving right triangles and scale drawing.
			M34w1 <i>MFWA1</i> M34w2 a 5G 5H 5I 8D 8E 8F M34w3 b 5J	M44w2 <i>MFWA2</i> M44w3 a M44w4 b 8E 8F M44w5 BC 1.2 p 75-76 BC 3.3 p 70-72	M54w1 BC 1.2 p 77-78 M54w2 BC 2.3 p 28-.36 m54w3 <i>MFWA1</i> m54w4 a 6C 6D m54w5 <i>MFWA2</i> m54w6 a 3D 3E 3F 3G 3H 3I m54w7 3J 3K 3L 4A 4B 4C 4D m54w8 4E 4F 4G 4H b 6E 6G 8E 8F
11. Estimate Students make sensible direct and indirect estimates of quantities and are alert to the reasonableness of measurements and results.	M 11.2 The student: Estimates the order of things by length, area, mass and capacity and makes numerical estimates of length using units that can be seen or handled.	M 11.3 The student: Makes sensible numerical estimates using units that can be seen or handled and uses language such as 'between' to describe estimates.	M 11.4 The student: Uses the known size of familiar things to help make and improve estimates, including centimetres, metres, kilograms, litres and minutes.	M 11.5 The student: Makes sensible estimates of length, area, mass, volume, capacity, angle and time in standard units and identifies unreasonable estimates of things.	M 11.6 The student: Estimates in situations in which it is sensible to do so, including those where direct measurement is impossible or impractical, and judges whether estimates and measurements are reasonable.
		M33w1 <i>MFWA1</i> M33w2 5B 5C MFWA2	M43w1 M43w2	M53w1	