Essential Numeracy Assessment

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

Name: _____

	Year 9			Year 10
Post-assessment mark:	Post-assessment mark ≥ 33	A	Post-assessment mark ≥ 64	
	Post-assessment mark 28–32	B	Post-assessment mark 56–63	
NSW Common Grade:	Post-assessment mark 24–27	C	Post-assessment mark 48–55	
	Post-assessment mark 20–23	D	Post-assessment mark 40–47	
	Post-assessment mark ≤ 19	E	Post-assessment mark ≤ 39	

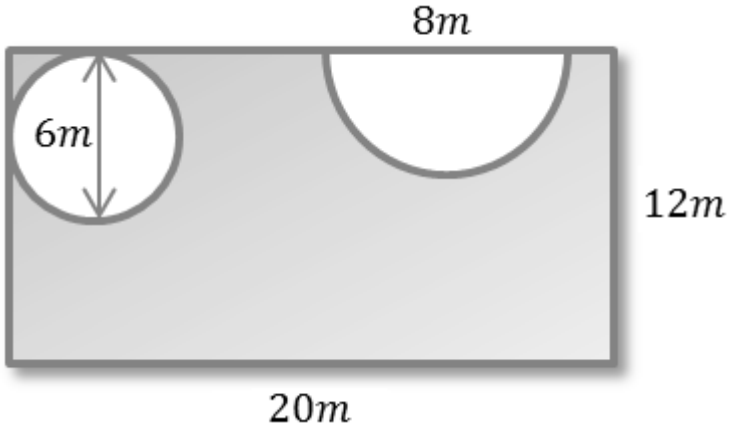
NSW Syllabus Outcome MA5.1-8MG

Area and Surface Area – Using Units of Measurement (ACMMG216)

Question 1

4 Marks

Calculate the shaded area in the composite shape.



Area = _____

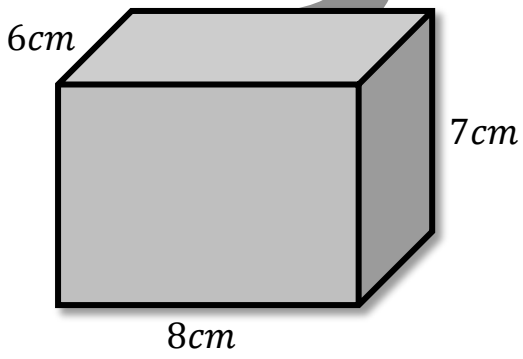
NSW Syllabus Outcome MA5.1-8MG

Area and Surface Area – Using Units of Measurement (ACMMG218)

Question 2

4 Marks

Calculate the surface area of the right prism.



Surface Area = _____

Essential Numeracy Assessment

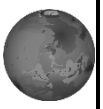
Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

NSW Syllabus Outcome MA5.1-9MG

Numbers of Any Magnitude – Using Units of Measurement (ACMMG219)

Question 3

4 Marks



The distance from the Earth to the following planets are as follows:

Earth - Mercury 57.9 **million km**

Earth - Mars 227.9 **million km**

Calculate the distance from Mars to Mercury and write your answer in scientific notation.

NSW Syllabus Outcome MA5.1-9MG

Numbers of Any Magnitude – Real Numbers (ACMNA210)

Question 4

4 Marks

Write each real number in scientific notation.

a) $9320 =$

b) $708000 =$

c) $0.000065 =$

d) $0.0000000041 =$

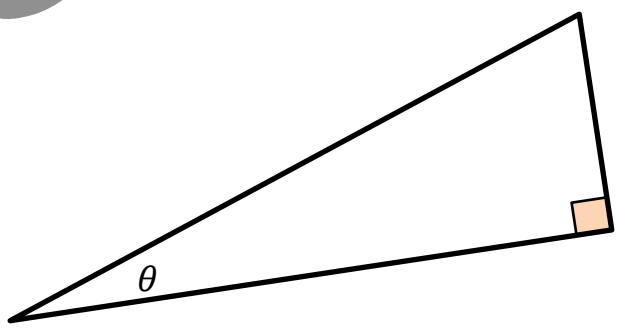
NSW Syllabus Outcome MA5.1-10MG

Right-Angled Triangles (Trigonometry) – Pythagoras and Trigonometry (ACMMG223)

Question 5

3 Marks

Label the hypotenuse, opposite and adjacent sides of the triangle in relation to the angle.



Essential Numeracy Assessment

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

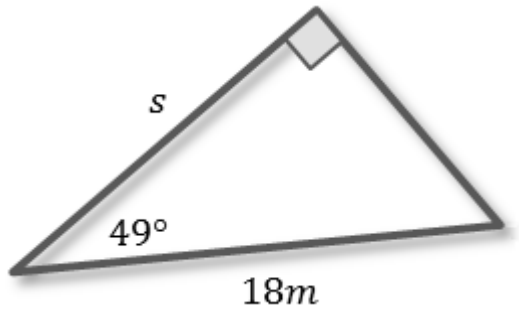
NSW Syllabus Outcome MA5.1-10MG

Right-Angled Triangles (Trigonometry) – Pythagoras and Trigonometry (ACMMG224)

Question 6

4 Marks

Use Trigonometry to calculate the missing side length of this triangle.



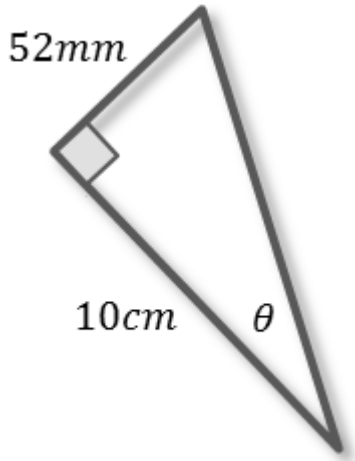
NSW Syllabus Outcome MA5.1-10MG

Right-Angled Triangles (Trigonometry) – Pythagoras and Trigonometry (ACMMG224)

Question 7

4 Marks

Use Trigonometry to calculate the missing angle in this triangle.



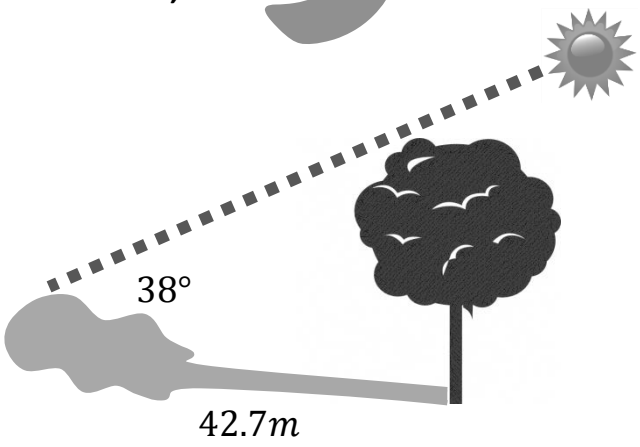
NSW Syllabus Outcome MA5.1-10MG

Right-Angled Triangles (Trigonometry) – Pythagoras and Trigonometry (ACMMG245)

Question 8

4 Marks

A tree makes a shadow of $42.7m$. If the angle of elevation that the sun makes with the ground is $38°$, how tall is the tree?



Essential Numeracy Assessment

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

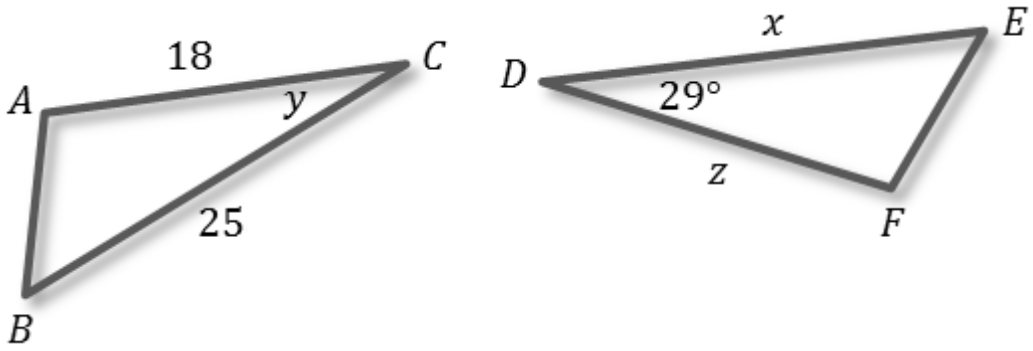
NSW Syllabus Outcome MA5.1-11MG

Properties of Geometrical Figures – Geometric Reasoning (ACMMG220)

Question 9

4 Marks

Calculate the value of the missing pronumerals in the similar triangles.



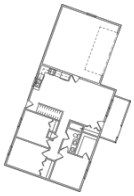
NSW Syllabus Outcome MA5.1-11MG

Properties of Geometrical Figures – Geometric Reasoning (ACMMG221)

Question 10

4 Marks

Phil has drawn some house plans in which the lounge room will be $10.5m$ long when it is built. This length has been drawn as $26.25mm$ on the house plan. What scale did Phil use for his house plans?



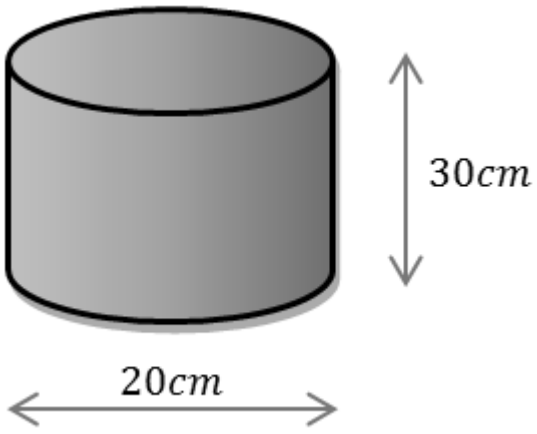
NSW Syllabus Outcome MA5.2-11MG

Area and Surface Area – Using Units of Measurement (ACMMG217)

Question 11

4 Marks

Calculate the volume of the cylinder.



Volume = _____

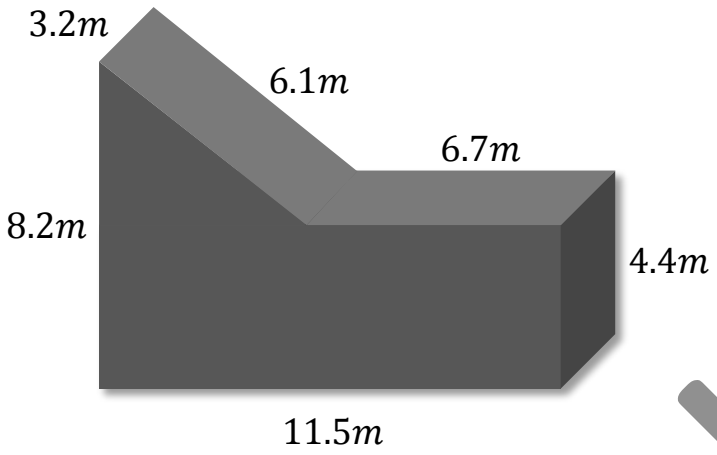
NSW Syllabus Outcome MA5.2-11MG

Area and Surface Area – Using Units of Measurement (ACMMG242)

Question 12

4 Marks

Calculate the surface area of the composite prism.



Surface Area = _____

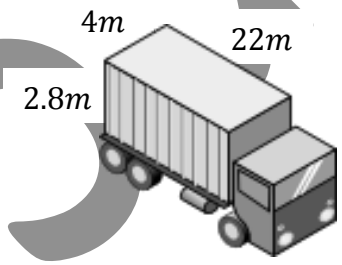
NSW Syllabus Outcome MA5.2-12MG

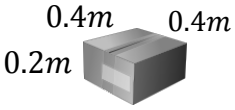
Volume – Using Units of Measurement (ACMMG218)

Question 13

4 Marks

Calculate the total number of parcels that will fit in this truck.





Essential Numeracy Assessment

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

NSW Syllabus Outcome MA5.2-12MG

Volume – Using Units of Measurement (ACMMG242)

Question 14

4 Marks

The water tank pictured has a diameter of 4.26m and a height of 3.95m. If the current height of water in the tank is 2.8m above ground level, calculate:

a) The capacity of the tank in litres.

b) How many litres of water is required to reach the tanks capacity?

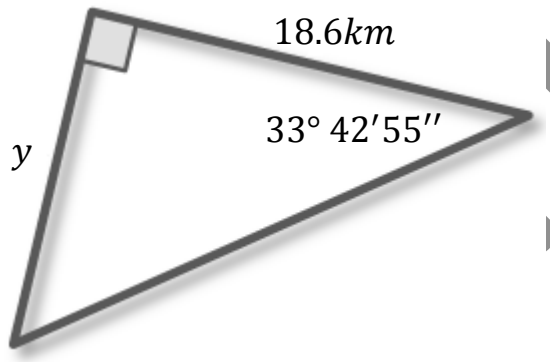
NSW Syllabus Outcome MA5.2-13MG

Right-Angled Triangles (Trigonometry) – Pythagoras and Trigonometry (ACMMG224)

Question 15

4 Marks

Use Trigonometry to calculate the missing side length of this triangle.



NSW Syllabus Outcome MA5.2-13MG

Right-Angled Triangles (Trigonometry) – Pythagoras and Trigonometry (ACMMG245)

Question 16

4 Marks

If a ship sails at a bearing of $S56°W$ for $94km$, how far due south and due west did it travel?

Essential Numeracy Assessment

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

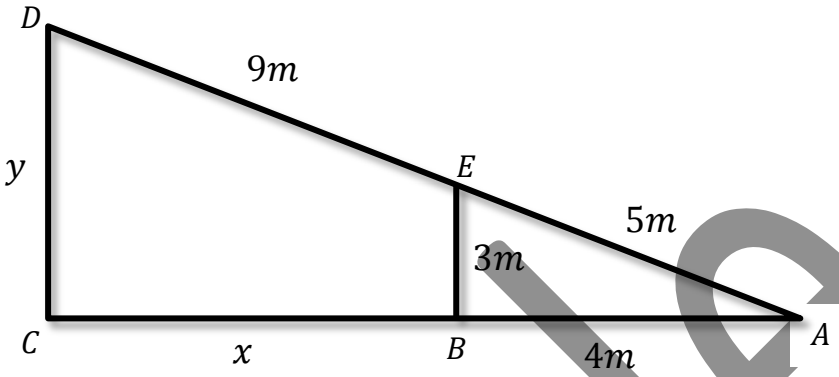
NSW Syllabus Outcome MA5.2-14MG

Properties of Geometrical Figures – Geometric Reasoning (ACMMG243)

Question 17

4 Marks

Solve for both of the unknowns in the diagram.



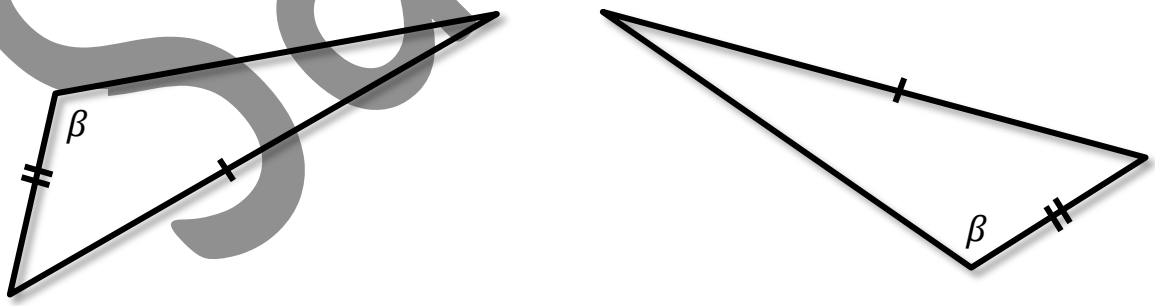
NSW Syllabus Outcome MA5.2-14MG

Properties of Geometrical Figures – Geometric Reasoning (ACMMG220)

Question 18

4 Marks

Prove that the pair of triangles are congruent.



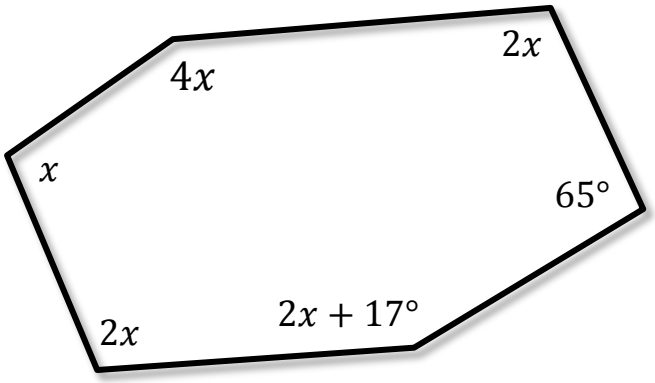
NSW Syllabus Outcome MA5.2-14MG

Properties of Geometrical Figures – Geometric Reasoning (ACMMG244)

Question 19

4 Marks

Calculate the value of the unknown angle in the shape.



Essential Numeracy Assessment

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

Teacher Reference

Question	NSW Syllabus Outcome		Australian Curriculum Sub strand	Content Description
1	Area and Surface Area	calculates the areas of composite shapes, and the surface areas of rectangular and triangular prisms MA5.1-8MG	Using Units of Measurement Year 9	Calculate the areas of composite shapes (ACMMG216)
2				Solve problems involving the surface area and volume of right prisms (ACMMG218)
3	Numbers of Any Magnitude	uses formulas to calculate the volumes of prisms and cylinders, and converts between units of volume MA5.1-9MG	Using Units of Measurement Year 9	Investigate very small and very large time scales and intervals (ACMMG219)
4			Real Numbers Year 9	Express numbers in scientific notation (ACMNA210)
5	Right-Angled Triangles (Trigonometry)	applies trigonometry, given diagrams, to solve problems, including problems involving angles of elevation and depression MA5.1-10MG	Pythagoras and Trigonometry Year 9	Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles (ACMMG223)
6				Apply trigonometry to solve right-angled triangle problems (ACMMG224)
7				
8			Pythagoras and Trigonometry Year 10	Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)

Essential Numeracy Assessment

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

9	Properties of Geometrical Figures	describes and applies the properties of similar figures and scale drawings MA5.1-11MG	Geometric Reasoning Year 9	Use the enlargement transformation to explain similarity and develop the conditions for triangles to be similar (ACMMG220)
10				Solve problems using ratio and scale factors in similar figures (ACMMG221)
11	Area and Surface Area	calculates the surface areas of right prisms, cylinders and related composite solids MA5.2-11MG	Using Units of Measurement Year 9	Calculate the surface area and volume of cylinders and solve related problems (ACMMG217)
12			Using Units of Measurement Year 10	Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)
13	Volume	applies formulas to calculate the volumes of composite solids composed of right prisms and cylinders MA5.2-12MG	Using Units of Measurement Year 9	Solve problems involving the surface area and volume of right prisms (ACMMG218)
14			Using Units of Measurement Year 10	Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)
15	Right-Angled Triangles (Trigonometry)	applies trigonometry to solve problems, including problems involving bearings MA5.2-13MG	Pythagoras and Trigonometry Year 9	Apply trigonometry to solve right-angled triangle problems (ACMMG224)
16			Pythagoras and Trigonometry Year 10	Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)

Stage 5.1-5.2 - Measurement and Geometry - Post NSW Syllabus Assessment

17	Properties of Geometrical Figures	calculates the angle sum of any polygon and uses minimum conditions to prove triangles are congruent or similar MA5.2-14MG	Geometric Reasoning Year 10	Formulate proofs involving congruent triangles and angle properties (ACMMG243)
18			Geometric Reasoning Year 9	Use the enlargement transformation to explain similarity and develop the conditions for triangles to be similar (ACMMG220)
19			Geometric Reasoning Year 10	Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244)