Name:	Teacher:	Homeroom

Year 9 MYP Mathematics

2017 Module 1 Test 2 – *Pythagoras and Trigonometry*

Technology Active

Writing Time: 50 minutes

Instructions

Write your name, teacher's name and homeroom at the top of this page when writing time begins.
Complete all answers in the spaces provided.
Calculators **may** be used.

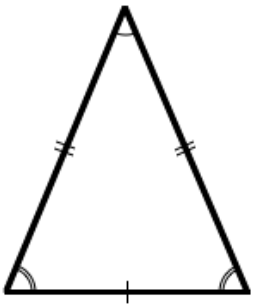
Criterion A: Knowledge and Understanding

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	i. **select** appropriate mathematics when solving simple problems in familiar situations ii. **apply** the selected mathematics successfully when solving these problems iii. generally **solve** these problems correctly.
3–4	i. **select** appropriate mathematics when solving more complex problems in familiar situations ii. **apply** the selected mathematics successfully when solving these problems iii. generally **solve** these problems correctly.
5–6	i. **select** appropriate mathematics when solving challenging problems in familiar situations ii. **apply** the selected mathematics successfully when solving these problems iii. generally **solve** these problems correctly.
7–8	i. **select** appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations ii. **apply** the selected mathematics successfully when solving these problems iii. generally **solve** these problems correctly.

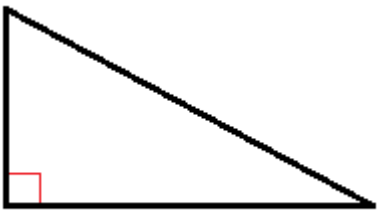
Section A: Simple and familiar (mostly levels 1, 2)

1. Which of the following is a right-angled triangle?

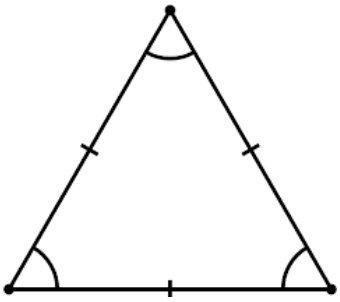
A.



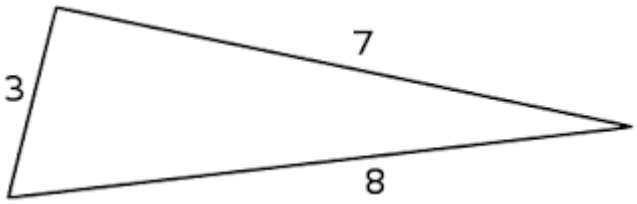
C.



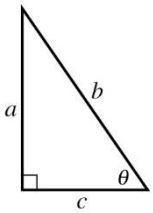
B.



D.



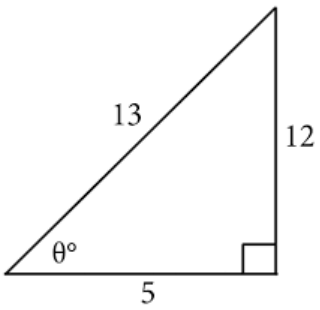
2. Which side in the triangle is the hypotenuse?



3. Evaluate $\cos(15^o)$, correct to 3 decimal places.

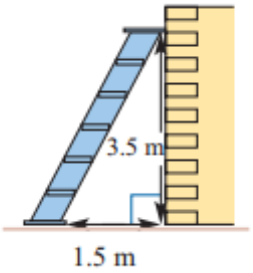
4. Use your calculator to find $\sqrt{151.4^2 - 66.7^2}$. Give your answer correct to 2 decimal places.

5. For a triangle shown write an expression for $\tan\theta$.



Section B: More complex and familiar (mostly levels 3, 4)

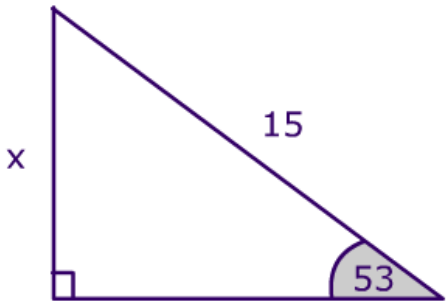
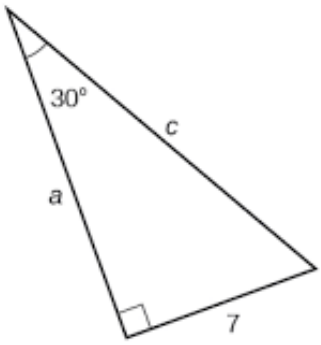
6. A ladder rests against a brick wall as shown in the diagram. The base of the ladder is 1.5 m from the wall, and the top reaches 3.5 m up the wall.



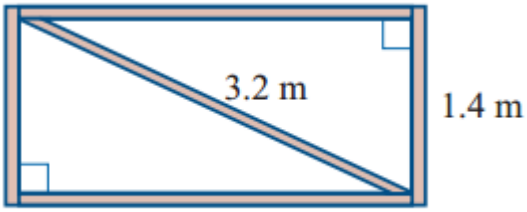
a) Find the length of the ladder, correct to 1 decimal place.

b) Find the angle between the ladder and the horizontal.

7. Find the value of the missing sides in each of the triangles below:

a)	b)
	

8. A farm gate that is 1.4 m high is supported by a diagonal bar of length 3.2 m.



a) Find the width of the gate, correct to 1 decimal places.

b) Find the angle between the diagonal bar and the horizontal correct to the nearest degree.

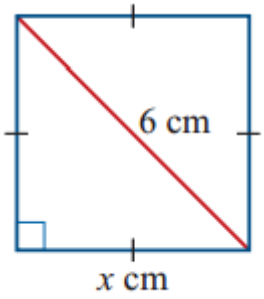
9. A ship sails 42 km due west and then 25 km due south.

a) Draw a diagram to illustrate the situation.

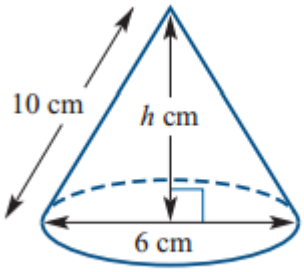
b) How far is the ship from its starting point? Answer correct to 2 decimal places.

Section C: Challenging but familiar (mostly levels 5, 6)

10. A square has diagonals of length 6 cm. Find the length of its sides, correct to 2 decimal places.

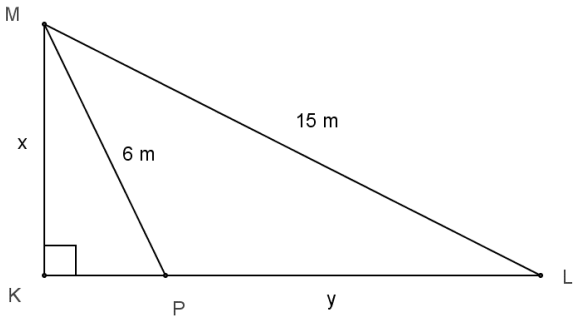


11. The slant height of this circular cone is 10 cm and the diameter of its base is 6 cm. Calculate the height of the cone, correct to 2 decimal places.



12. For the triangle KLM, the length of KP = 2 m. Let $MK = x$ and $PL = y$.

a) Find x, correct to 2 decimal places.



b) Find y, correct to 2 decimal places.

c) Find the angle $\angle MLK$, to 2 decimal places.

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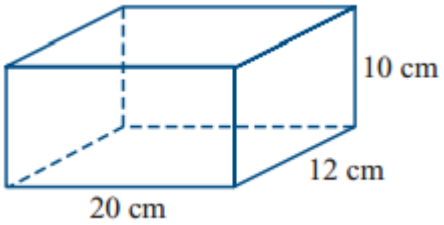
Section D: Challenging (mostly levels 7, 8)

13. Chris wants to use a rectangular pencil box. What is the length of the longest pencil, that would fit inside the box shown. Give your answer to the nearest centimetre.



14. Sophia joins a guided bushwalking party through the Tasmanian South-West. At one point during her walk, the guide points out a very tall Mountain Ash tree on the other side of the river.

Sophia wants to estimate the height of the tree. With special equipment, Sophia measures the angle of elevation of the top of the tree to be 35º, then she walks 50 m towards the tree in a straight line and measures the angle of elevation again to be 47º.

a) Draw a diagram to illustrate the situation.

b) Determine the height of the tree above Sophia’s eye level.

END OF TEST