Lesson 7

Trigonometry : Year 9

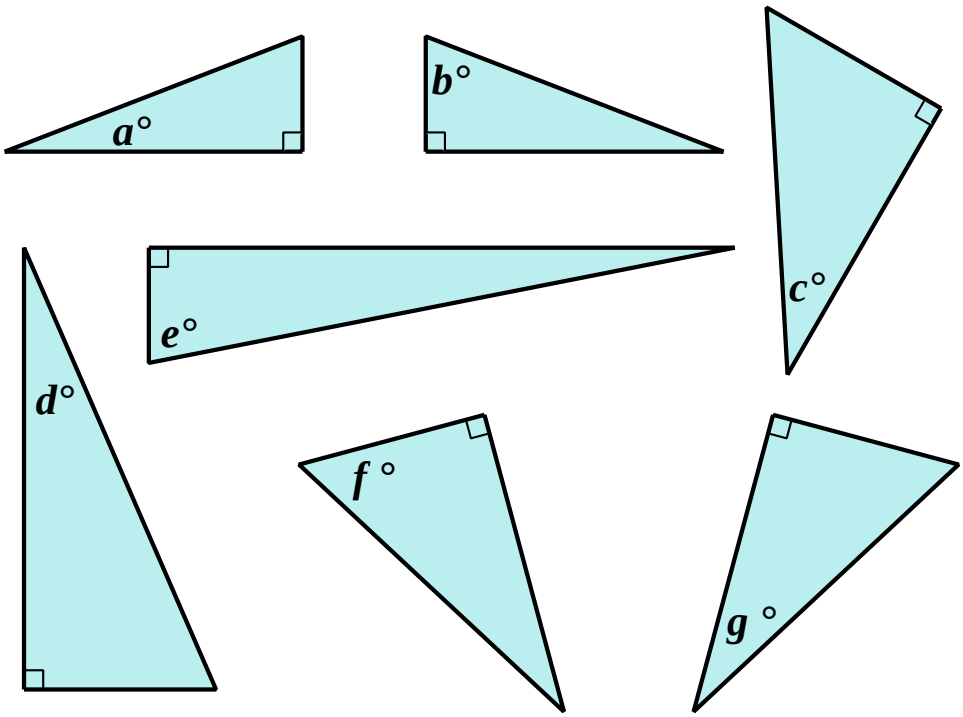
7.1 Test

Question 1

A procedure for labelling the sides of right-angled triangles is given below:

First	*hyp*	Look for the *right-angle*. The *hypotenuse* does not touch the *right-angle*.
Second	*opp*	Look for the *angle-of-focus*. The *opposite* does not touch the *angle-of-focus*.
Third	*adj*	The *adjacent* touches both the *right-angle* and the *angle-of-focus*.

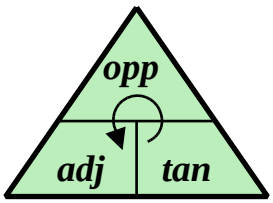
Use the procedure to label each of the following triangles' sides either *hyp*, *opp* or *adj* where the lettered angle is the *angle-of-focus*.



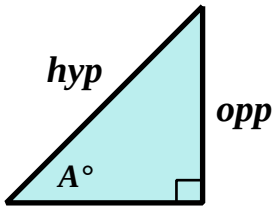
[14 marks]

Question 2

Here is a formula triangle for *tan*.

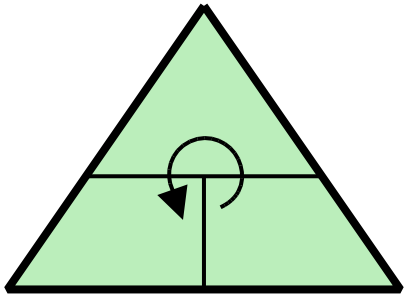


T O A



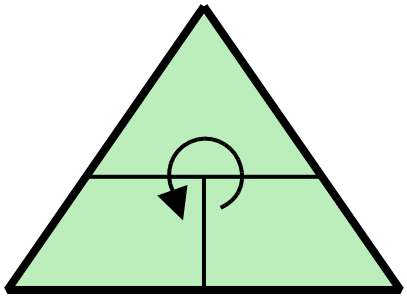
adj

(i) Complete the following formula triangle for *sin*.



[3 marks]

(ii) Complete the following formula triangle for *cos*.



[3 marks]

Question 3

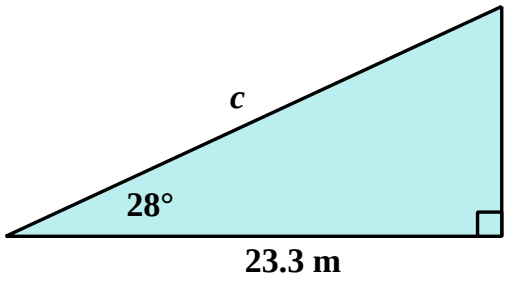
Calculate the size of angles $K°$, $L°$ and $M°$, where;

$K° = arcsin\left(\frac{5.2}{8.7}\right)$ $L° = arccos\left(\frac{45}{98}\right)$ $M° = arctan\left(\frac{87.2}{12.6}\right)$

Give each answers correct to 1 decimal place.

[6 marks]

Question 4



(i) Label the triangle sides *hyp*, *opp*, and *adj*.

[1 mark]

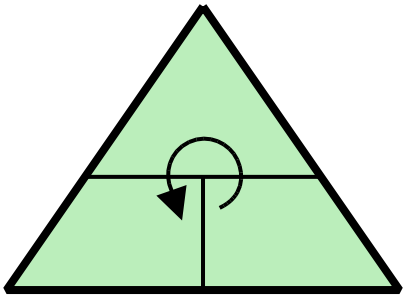
(ii) Write down *the GET YOUR TRIGONOMETRY CORRECT word*.

[1 mark]

(iii) Cross out the side of *no interest* in your **part (ii)** answer.

[1 mark]

(iv) Draw the relevant formula triangle.



[1 marks]

(v) Write out the formula that you will use to find *c*, then use it to calculate *c*.

[4 marks]

Question 5

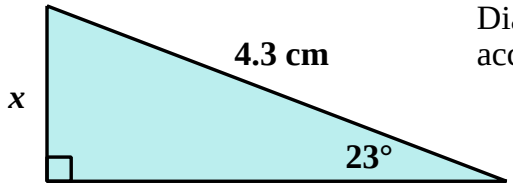
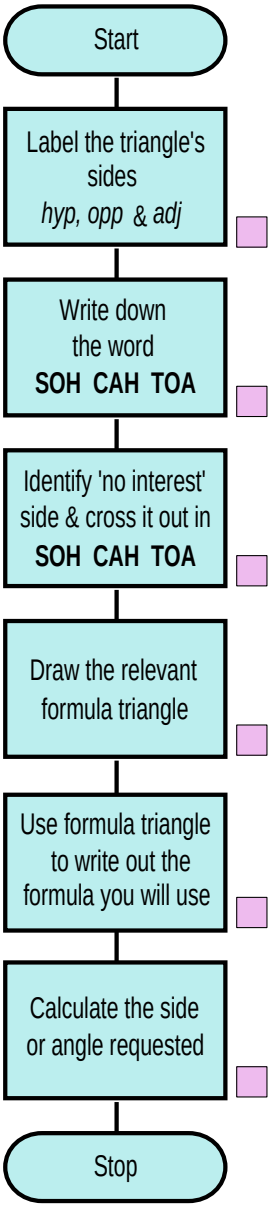


Diagram **NOT** accurately drawn

Calculate the length marked *x*.
Give your answer correct to 3 significant figures.

[6 marks]



Question 6

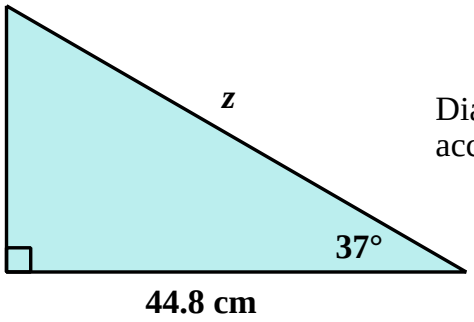


Diagram **NOT** accurately drawn

Calculate the length marked *z*.
Give your answer correct to 3 significant figures.

[6 marks]

Question 7

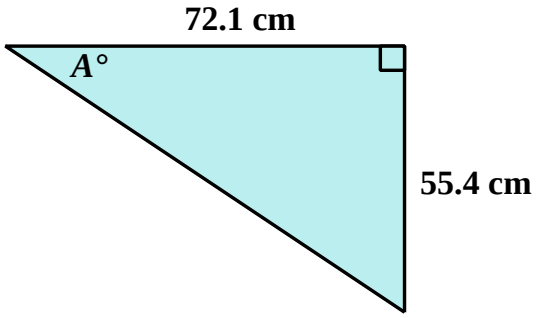
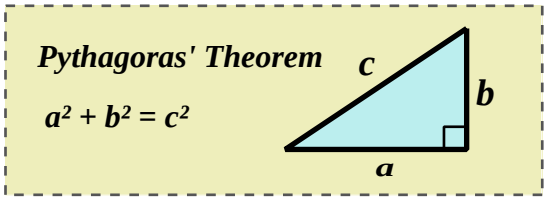


Diagram **NOT** accurately drawn

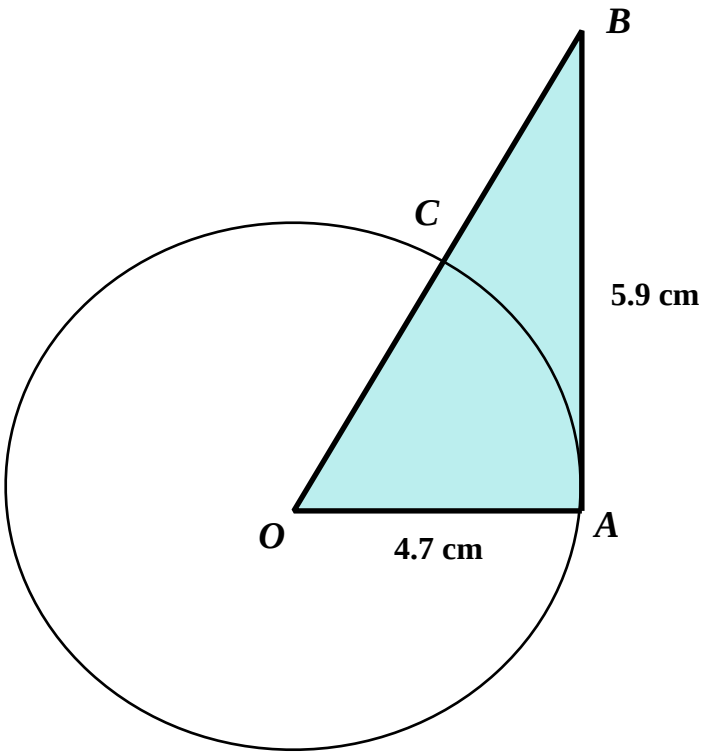
Calculate the angle marked *A*.
Give your answer correct to 1 decimal place.

[6 marks]

This next question involves The Theorem of Pythagoras:



Question 8



A is a point on a circle with centre *O* and radius 4.7 cm.
AB is the tangent to the circle at *A*.
AB = 5.9 cm.
OB intersects the circle at *C*.

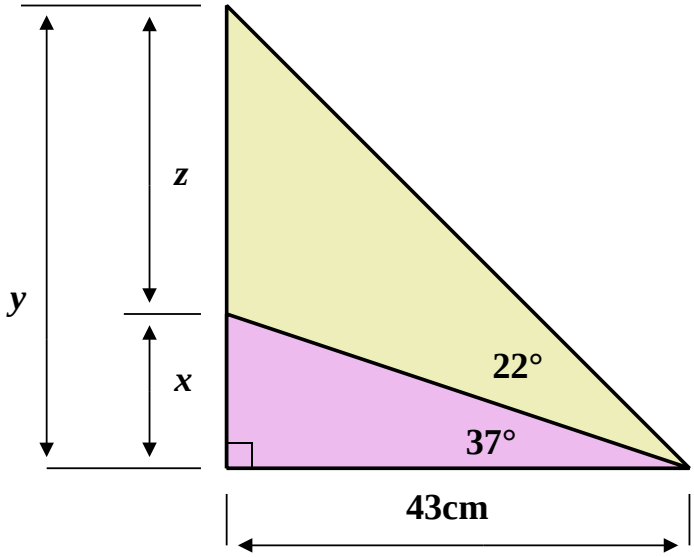
(a) Use the Theorem of Pythagoras to calculate the length of *OB*.
Give your answer correct to 3 significant figures.

[4 marks]

(b) Calculate the length *BC*.
Give your answer correct to 3 significant figures.

[2 marks]

Question 9



(a) Calculate length *x*.

[4 marks]

(b) Calculate length *y*.

[4 marks]

(c) Use your part **(a)** and **(b)** answers to calculate length *z*.

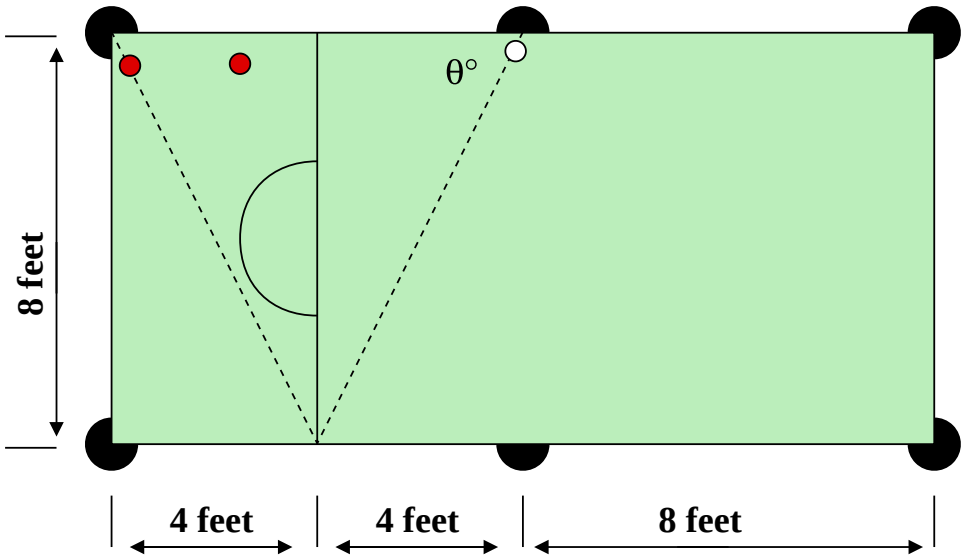
[2 marks]

Question 10

Mr Hugo Inn has a tricky snooker shot to play.
He must hit the cue ball by the centre pocket so that it bounces off the opposite side of the table, returning to hit the ball by the corner pocket into that pocket.

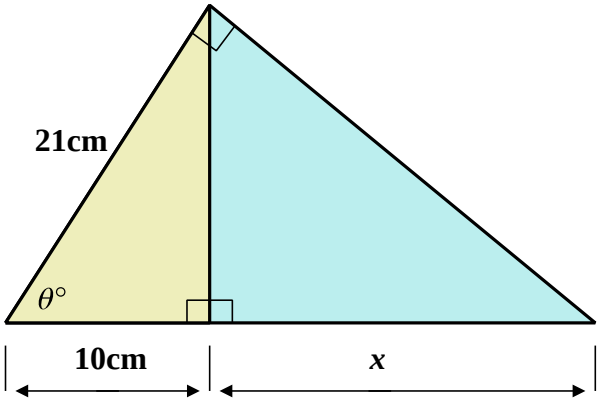
What is the angle, marked θ, that he should hit the cue ball with ?

Show your working.



[6 marks]

Question 11



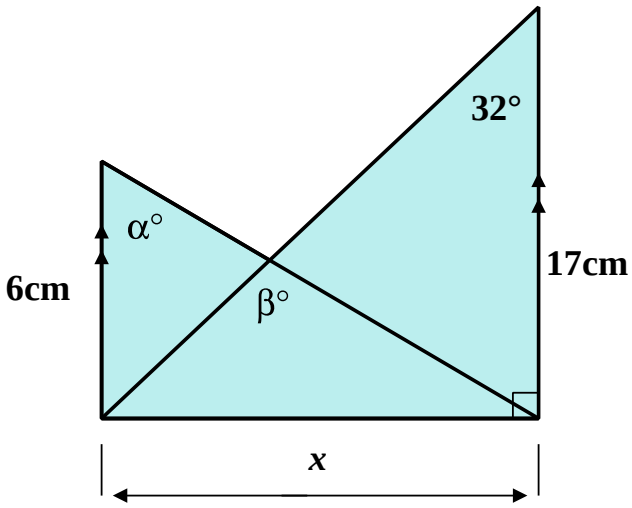
(i) Find the angle marked θ.

(ii) Then find the value of the length marked x.

Show your working.

[6 marks]

Question 12



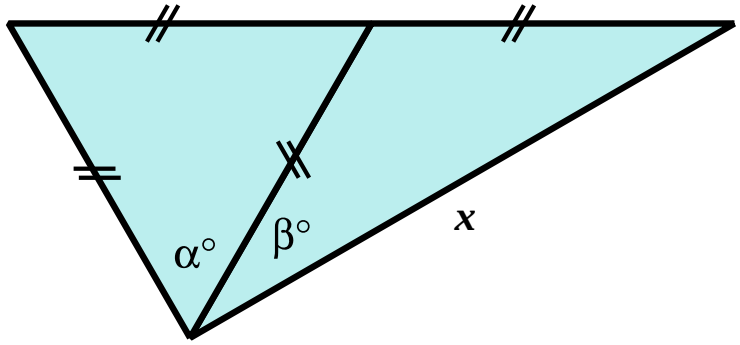
(i) Find the length of the side marked, x.

(ii) Then find the angle marked $\alpha°$.

(iii) Finally, deduce the value of the angle marked $\beta°$.

[6 marks]

Question 13



In the figure shown the equilateral triangle is of side length 12.5cm.

(i) Without using Trigonometry, deduce the size of angle α.

(ii) Carefully explain how to determine angle β, without using trigonometry.

(iii) Calculate the length of the base of the isosceles triangle, marked x.

[6 marks]

Question 14
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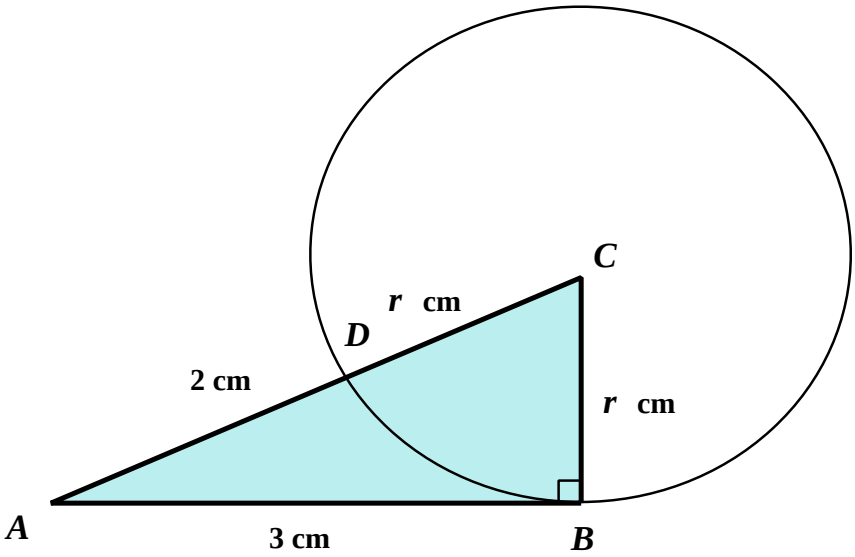

Diagram **NOT** accurately drawn

B and *D* are points on a circle, centre *C*.
AB is the tangent to the circle at *B*.
ADC is a straight line.
AB = 3 cm.
AD = 2 cm.

The radius of the circle is *r* cm.
Find the value of *r*.

[8 marks]