# Section Check In –

# PT: Pythagoras’ Theorem and Trigonometry

## Questions

1. In the triangle, cm and cm. Given that the area of the triangle is cm2, find the possible values of the angle.

[PT2]

2. Find the exact value of, giving your answer in the form .

[PT1]

3. Given that , find the possible values of  in the range 

[PT1]

4. Given the , find the exact value of;

(i) ,

(ii) .

[PT1,3]

5. Solve the equation  for .

[PT5]

6. Prove that .

[PT3,4]

7. Given that  is the obtuse angle such that , find the exact value of .

[PT1]

8. The triangle ABC has length AB=30 cm, AC = 23 cm and angle B = 38o.

Kate states that the angle C = 53.4o. Explain why Kate may not be correct.

[PT2]

9. A boat sails due north from a port. After going a distance of km, the boat changes direction and sails for a further km on a bearing of .

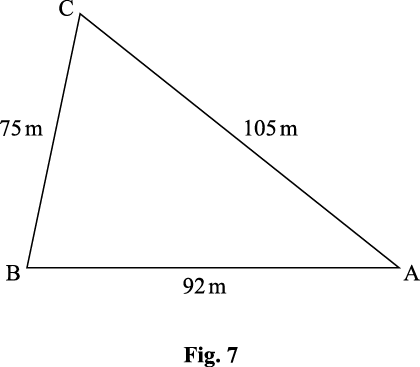
(i) How far is the boat now from the port?

(ii) On what bearing should the boat now sail to return directly to the port?

[PT6]

10. The sketch below shows a village green ABC which is bounded by three straight roads.

AB = 92 m, BC = 75 m and AC = 105 m.



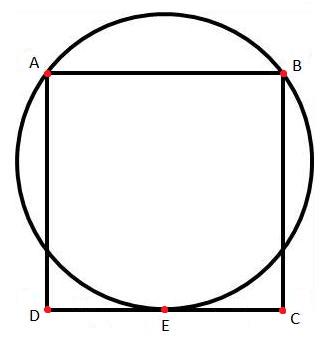
Calculate the area of the village green.

[PT6]

**Extension**

ABCD is a square, side length 8 cm. ABE are points on a circle, CE = DE.

Find the radius of the circle.

[](https://twitter.com/OCR_Maths/status/654986469413662720/photo/1)

## Worked solutions

1. Using Area ,  and therefore 

Angle  or 

2. 

3. 

 or 

4. (i) Using Pythagoras 



(ii) 

5. Equation is 

Using , 

Multiplying both sides by , 

Using identity  for the left-hand side,





Hence  giving solutions 

6. Left-hand side 

, using identities  and 



, cancelling 



7. Using Pythagoras 

Given that angle is obtuse 

8. 



Acute angle  , obtuse angle 

9.

A

P

3 km

40°

B

5 km

(i) Using cosine rule, 



Boat is km from the port

(ii) Using sine rule,  giving 

Bearing to sail 

10. Using cosine rule to find angle B



Area =  m2 (3sf)

**Extension**

Let O be the centre of the circle.

CE = 4 cm. Mark point N on BC such that ON parallel to EC. ON = 4 cm.







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