MATHSAURUS

AS Mathematics Exam Questions by Topic
Chapter 6: Trigonometry - sine and cosine rules and the area of a triangle

These questions are taken from the Specimen Exam materials and the real 2018 papers for the new syllabus AS and A-level mathematics courses and arranged by chapter of the textbooks by Goldie et al (available here: `https://amzn.to/39umfr5` and `https://amzn.to/3hE8kBL`). There are a mixture of questions from OCR A, OCR B (MEI), Edexcel and AQA. Although the style of questions varies a little across the exam boards the content of the syllabus is almost identical so these are suitable for students preparing for any exam board.

Free problem sets for all other chapters, as well as video solutions, full past papers and other content for GCSE and A-level maths can be found at:

`https://mathsaurus.com/`

OCR B MEI AS Sample Paper 2 Question 5:

5 A triangular field has sides of length 100 m, 120 m and 135 m.

(i) Find the area of the field. **[5]**

(ii) Explain why it would not be reasonable to expect your answer in (i) to be accurate to the nearest square metre. **[1]**

AQA AS Sample Paper 1 Question 6:

6 A parallelogram has sides of length 6 cm and 4.5 cm.
The larger interior angles of the parallelogram have size α

Given that the area of the parallelogram is 24 cm^2, find the exact value of $\tan\alpha$

[4 marks]

Edexcel AS 2018 Paper 1 Question 7:

7. In a triangle ABC, side AB has length 10 cm, side AC has length 5 cm, and angle $BAC = \theta$ where θ is measured in degrees. The area of triangle ABC is 15 cm^2

(a) Find the two possible values of $\cos\theta$

(4)

Given that BC is the longest side of the triangle,

(b) find the exact length of BC.

(2)

Edexcel AS Sample Paper 1 Question 8:

8.

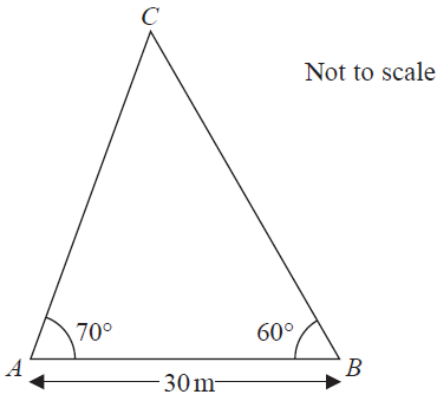


Figure 1

A triangular lawn is modelled by the triangle ABC, shown in Figure 1. The length AB is to be 30 m long.

Given that angle $BAC = 70°$ and angle $ABC = 60°$,

(a) calculate the area of the lawn to 3 significant figures.

(4)

(b) Why is your answer unlikely to be accurate to the nearest square metre?

(1)

OCR A AS 2018 Paper 2 Question 1:

1 In triangle ABC, $AB = 20$ cm and angle $B = 45°$.

(i) Given that $AC = 16$ cm, find the two possible values for angle C, correct to 1 decimal place. **[4]**

(ii) Given instead that the area of the triangle is $75\sqrt{2}$ cm^2, find BC. **[2]**

OCR A AS Sample Paper 1 Question 3:

3 The points P, Q and R have coordinates $(-1, 6)$, $(2, 10)$ and $(11, 1)$ respectively. Find the angle PRQ. **[4]**

OCR B MEI 2018 Paper 3 Question 1:

1 Triangle ABC is shown in Fig. 1.

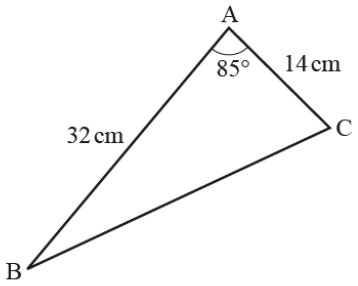
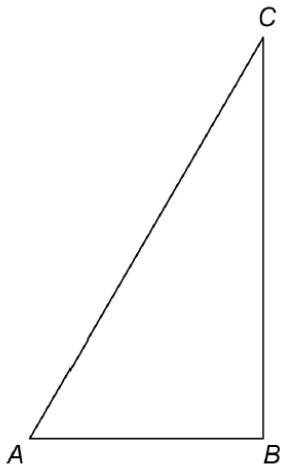


Fig. 1

Find the perimeter of triangle ABC. **[3]**

AQA AS 2018 Paper 1 Question 6:

6 ABC is a right-angled triangle.



D is the point on hypotenuse AC such that $AD = AB$.

The area of ΔABD is equal to half that of ΔABC.

6 (a) Show that $\tan A = 2 \sin A$

[4 marks]

6 (b) (i) Show that the equation given in part **(a)** has two solutions for $0° \leq A \leq 90°$

[2 marks]

6 (b) (ii) State the solution which is appropriate in this context.

[1 mark]