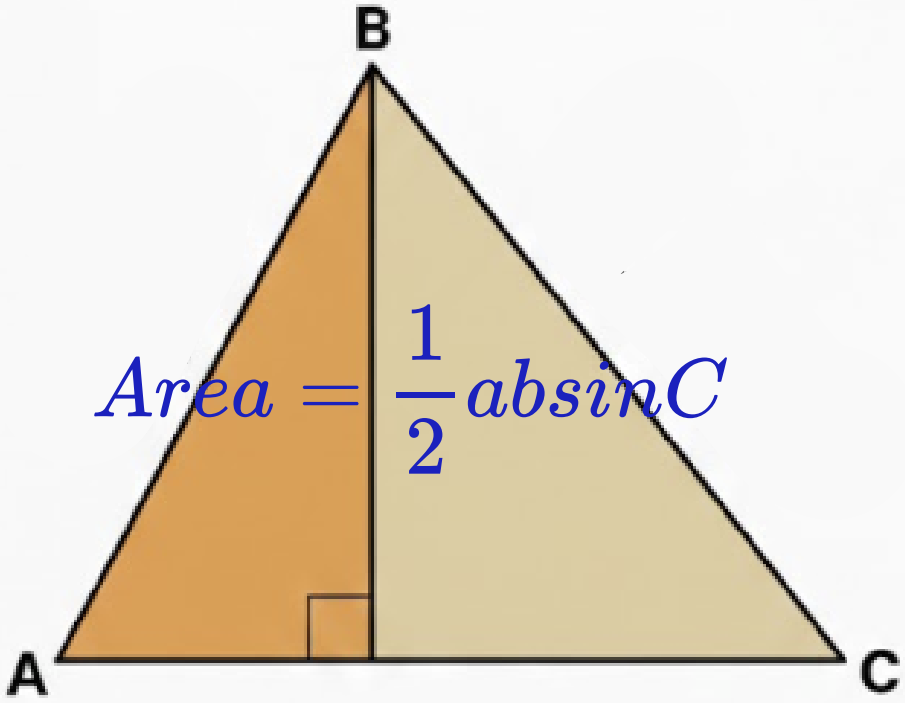
EDEXCEL IGCSE MATHEMATICS

UNIT 1 (MODULAR)

GEOMETRY – TRIGONOMETRY (AREA)

QP & MS (2018 - 2025)



COMPILED BY:
SIR MUHAMMAD ABDULLAH SHAH

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EDEXCEL IGCSE MATHEMATICS MODULAR FOR MAY & OCT 2026

by Sir Muhammad Abdullah Shah

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1. June 2023 1HR/Q25

Here is a triangle ABC

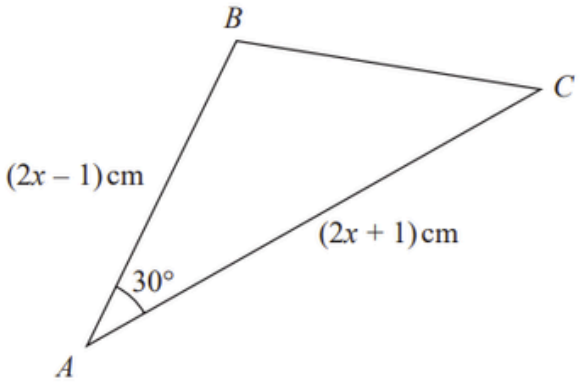

Diagram **NOT** accurately drawn

The area of the triangle is $(x^2 + x - 3.75)\,\text{cm}^2$

Find the size of the largest angle in triangle ABC
Give your answer correct to the nearest degree.

.....°

(Total for Question 25 is 6 marks)

2. Jan 2023 1HR/Q9

The diagram shows an isosceles triangle ABC

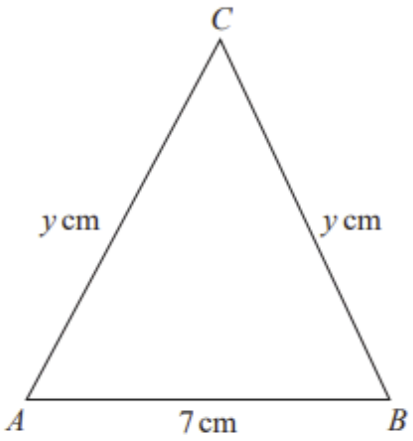

Diagram **NOT** accurately drawn

$AB = 7\,\text{cm}$ $AC = BC = y\,\text{cm}$

The area of the triangle is $42\,\text{cm}^2$

Work out the value of y

$y =$ .....

(Total for Question 9 is 4 marks)

3. Jan 2022 1H/Q9

The diagram shows isosceles triangle ABC

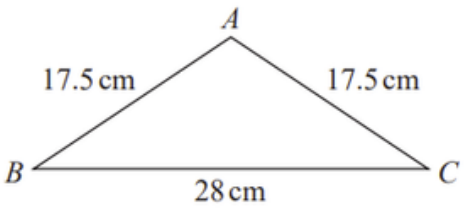

Diagram **NOT** accurately drawn

$AB = AC = 17.5$ cm $\quad BC = 28$ cm

Calculate the area of triangle ABC

..... cm^2

(Total for Question 9 is 4 marks)

MARKING SCHEME

1. June 2023 1HR/Q25

25	eg $\frac{1}{2}(2x-1)(2x+1)\sin 30 = x^2+x-3.75$ oe		6	M1	for equating area of triangle with the given area
		3.5		A1	for the value of x
	$(BC^2 =)"6"^2+"8"^2-(2\times"6"\times"8"\times\cos 30)(=16.8(615...))$ oe or $(BC=)\sqrt{"16.8..."}(=4.10(628...))$			M1	ft dep on M1 for a correct method to find BC^2 or BC ($AB=6$ and $AC=8$)
	$\frac{\sin(ABC)}{"8"}=\frac{\sin 30}{\sqrt{"16.8"}}$ oe or $\frac{\sin(BCA)}{"6"}=\frac{\sin 30}{\sqrt{"16.8"}}$ oe or $"6"^2="8"^2+\left(\sqrt{"16.8"}\right)^2-\left(2\times"8"\times\sqrt{"16.8"}\times\cos(BCA)\right)$ oe or $"8"^2="6"^2+\left(\sqrt{"16.8"}\right)^2-\left(2\times"6"\times\sqrt{"16.8"}\times\cos(ABC)\right)$ oe			M1	ft dep on previous M1 for a correct method to find angle ABC or angle BCA
	$(\sin ABC=)\frac{\sin 30\times"8"}{\sqrt{"16.8"}}(=0.974...)$ oe or $ABC=76.9\ldots$ or $(\sin BCA=)\frac{\sin 30\times"6"}{\sqrt{"16.8"}}(=0.730...)$ oe or $BCA=46.9\ldots$ or $(\cos BCA=)\frac{"8"^2+\left(\sqrt{"16.8"}\right)^2-"6"^2}{2\times"8"\times\left(\sqrt{"16.8"}\right)}(=0.682...)$ oe or $BCA=46.9\ldots$ or $(\cos ABC=)\frac{"6"^2+\left(\sqrt{"16.8"}\right)^2-"8"^2}{2\times"6"\times\left(\sqrt{"16.8"}\right)}(=-0.226...)$ oe or $ABC=103.0\ldots$			M1	ft dep on previous M1 for a correct rearrangement for sin ABC or sin BCA or cos BCA or cos ABC
	Correct answer scores full marks (unless from obvious incorrect working)	103		A1	accept awrt 103
					Total 6 marks

2. Jan 2023 1HR/Q9

9	$\frac{1}{2}\times7\times h=42$ oe or $(h=)\frac{42\times2}{7}$ $(=12)$ oe or $3.5^2+h^2=y^2$ or $h=\sqrt{y^2-3.5^2}$ oe		4	M1	A correct equation involving the height or a correct expression for height – could be in terms of y
	$y^2=\left(\frac{7}{2}\right)^2+("12")^2$ oe or $\frac{1}{2}\times7\times"\sqrt{y^2-3.5^2}"=42$ oe			M1	(indep) use of *their* height (any found value that they have called 'height')
	$y=\sqrt{\left(\frac{7}{2}\right)^2+("12")^2}$ oe			M1	**all values must come from a correct method**
	Correct answer scores full marks (unless from obvious incorrect working)	12.5		A1	oe eg $\frac{25}{2}$
					Total 4 marks

3. Jan 2022 1H/Q9

9	17.5^2-14^2 $(=110.25)$		4	M1	or for use of cosine rule to find one of the angles eg $28^2=17.5^2+17.5^2-2\times17.5\times17.5\times\cos A$ **or** eg $\cos B=\frac{14}{17.5}$
	$\sqrt{17.5^2-14^2}$ $(=10.5)$			M1	**or** for rearranging the cosine rule to eg $\cos A=\frac{17.5^2+17.5^2-28^2}{2\times17.5\times17.5}$ $(A=106.26...)$ **or** eg $B=\cos^{-1}(\frac{14}{17.5})$ $(=36.86...)$
	$0.5\times28\times$ "10.5" oe			M1	**or** for $0.5\times17.5\times17.5\times\sin106.26...$ oe eg $0.5\times17.5\times28\times\sin36.86...$ [clear use of Heron's formula: M1 for $S=0.5(17.5+17.5+28)(=31.5)$ M2 for $\sqrt{"31.5"("31.5"-17.5)^2("31.5"-28)}$ oe]
		147		A1	accept awrt 147
					Total 4 marks