HIGHER ONLY
HIGHER TIER

Name ..... Class .....

G23: Area of a triangle

Solve problems using $\frac{1}{2}ab\sin C$

20 marks · 25 minutes · Calculator allowed

1) A triangular field has sides 50 m and 70 m with an angle of 65° between them. Seed costs 20p per m^2. Find the cost of seeding the field.

£ .....

[Question 1: 3 marks]

2) Find the area of a regular pentagon with sides of 6 cm.

..... cm^2

[Question 2: 4 marks]

3) A triangle has area 30 cm^2 and two sides of 8 cm and 10 cm. Find the two possible values of the angle between them.

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[Question 3: 3 marks]

4) A parallelogram has area 40 cm^2 and sides of 8 cm and 10 cm. Find its acute angle.

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[Question 4: 2 marks]

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5) Find the area of the segment cut off by a chord that subtends 100° at the centre of a circle of radius 8 cm.

..... cm^2

[Question 5: 4 marks]

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6) A triangle has two sides of 10 cm and an area of 50 cm^2. Find the angle between the equal sides.

..... °

[Question 6: 2 marks]

7) Find the area of a triangle with sides 7 cm, 8 cm and 9 cm.

..... cm^2

[Question 7: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	£317	Area 1586 m^2 (P1, P1); $\times 0.2$ (A1).
2	61.9	Centre to vertex $\frac{3}{\sin 36^\circ}$ (P1, P1); $5 \times \frac{1}{2} r^2 \sin 72^\circ$ (P1); A1.
3	48.6 and 131.4	$40 \sin C = 30$ (P1); 48.6 (A1); $180 - 48.6$ (A1).
4	30	$80 \sin \theta = 40$ (P1); A1.
5	24.3	Sector 55.85 (P1); triangle 31.51 (P1, P1); A1.
6	90	$50 \sin C = 50$ (P1); A1.
7	26.8	Angle via cosine rule, then $\frac{1}{2} ab \sin C$ (P1); A1.