



GCSE Foundation/Higher 16

Shape, space and measure



Mark scheme



57 minutes



48 marks

Properties of shape

M1. (a) 5 (equal) exterior angles must total 360°
and
 $360 \div 5 = 72$ or $5 \times 72 = 360$
 $360 \div 5 = 72$ is not enough ... there must be some reference to exterior angles

B1

(b) 2×72 or $360 - (2 \times 108)$
 oe

M1

(x =) 144

A1

[3]

M2. (a) $\pi \times 3^2$
 $3.1(4...) \times 3^2$
 9π
Accept 9 (x) π or π (x) 9
Do not accept fw

M1

A1

(b) $\pi \times 3^2 \times 0.5$
 or $9\pi \times 0.5$
 or their (a) $\times 0.5$
 $3.1(4...) \times 3^2 \times 0.5$
 π not needed for M1 ft

M1

4.5π
Accept 4.5 (x) π or π (x) 4.5
Answer must be in terms of π

A1ft

[4]

M3. $(0.5 \times) \pi \times 10 \times 10$

Allow $\pi = 3$ or 3.1 or 3.14(...)

M1

157 or 50π

$155 - 158$

A1

cm^2

B1

[3]

M4. (a) $32 \times 36 \div 2$

oe

M1

576

A1

(b) 35.5

B1

[3]

M5. (a) Complete explanation

eg, Quadrilateral can be divided
into 2 triangles **and** 2×180

Use of $(n - 2) \times 180$ with $n = 4$

or Using $\sum (\text{external angles}) = 360$

*eg, $\sum (\text{internal angles} + \text{external angles})$
 $= 4 \times 180$*

$\sum (\text{internal angles}) = 4 \times 180 - 360$

B for partial explanation

B0 for 2×180 only

B2

(b) (i) $3x - 12 + x - 6 + 2x + 90 = 360$

or better eg, $6x + 72 = 360$

B0 for $3x - 12 + x - 6 + 2x + 90 = 180$

B1

(ii) $6x = 288$ or $6x = 360 - 72$ or
 $x = (\text{Their } 288) \div 6$
ft M1 for $6x = 108$ or $6x = 180 - 72$
or (Their 108) $\div 6$

M1

$x = 48$
ft A1 for $x = 18$

A1

132
 $3 \times (\text{Their } x) - 12$ for $35 \leq x \leq 63$
SC1 48 with no working or using T & I
SC2 (48 and) 132 with no working or using T & I

B1 ft

[6]

M6. $360/5$

$540/5$

M1

72 or 108 seen

A1

$(180 - \text{their } 108)/2$
 $108 - 72$ or $180 - 72 - 72$

M1

36

A1

[4]

M7. $(\angle ACB =) 180 - 2 \times 40$
oe or 100 seen

M1

$2 \times (\text{their } 100) + 40 + x = 360$
oe

DM1

120

[3]

M8. (a) **A** Parallelogram

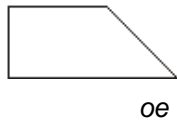
B1

B Rhombus

*Allow parallelogram for **B** if not given for **A***

B1

(b)



B1

Trapezium

No ft for square or rectangle

No ft for parallelogram or rhombus if given in (a)

B1 ft

[4]

M9. **Note** Mark the method that gives the best score

Do not award M1 if **either** B1 clearly comes from incorrect assumptions

(e.g. $\angle BAE = 90^\circ$)

SC3 complete method with 1 arithmetic error

$(\angle BAD) \rightarrow 70$

B1

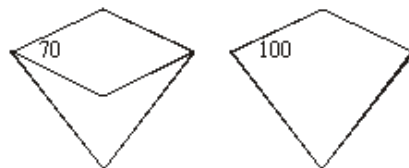
$(\angle BAE) \rightarrow 100$

B1

(their 100) – (their 70)

M1

30



A1

$$(\angle ADC) \rightarrow 250$$

B1

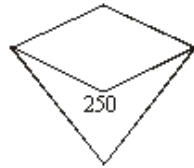
$$360 - 250 - 50 \text{ or } 60$$

B1

$$(\text{their } 60) \div 2$$

M1

$$30$$



A1

$$(\angle ADB) \rightarrow 55 \text{ or } (\angle ADE) \rightarrow 125$$

B1

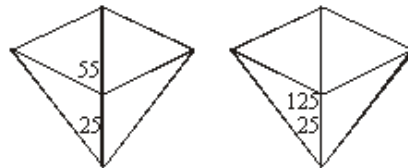
$$(\angle AED) \rightarrow 25$$

B1

$$(\text{their } 55) - (\text{their } 25) \text{ or } 180 - (\text{their } 125) - (\text{their } 25)$$

M1

$$30$$



A1

$$(\angle CAD) \rightarrow 35$$

B1

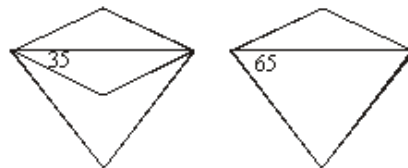
$$(\angle CAE) \rightarrow 65$$

B1

$$(\text{their } 65) - (\text{their } 35)$$

M1

$$30$$



A1

[4]

M10. Sight of 360

B1

$$360 \div 20 (= 18)$$

Totalling ratios and dividing into 'their 360'

M1

$$7 \times 18 = 126$$

A1

[3]

M11. 180 – 162 or 18

$$(n - 2) \times 180 = 162n$$

M1

$$360 \div \text{their } 18$$

M1 dep

$$x = 20$$

A1

[3]

M12. (a) 180 – 48 (= 132)

Provided that the candidate has not used $R = 48^\circ$

M1

$$\text{Their } 132 \div 2 (= 66)$$

DM1

$$180 - 66 = 114$$

$$66 + 48 = 114 \text{ scores A1}$$

A1 cao

(b) Angle sum of triangle = 180°

B1

Quadrilateral = 2 triangles

$$\text{Quadrilateral} = 4 \text{ triangles} - 360^\circ$$

or

4 x st. lines – sum of ext angles i.e.

$$4 \times 180 - 360$$

B1

[5]

M13. (a) Trapezium

B1

(b) Rectangle

B1

(c) Rhombus

B1

[3]

