

Mark schemes

Q1.

Alternative method 1

$$60 \div 2 \text{ or } 30$$

*exterior angle
may be on diagram*

M1

$$360 \div \text{their } 30$$

M1dep

$$12$$

A1

Alternative method 2

$$\frac{360 - 60}{2} \text{ or } \frac{300}{2} \text{ or } 150$$

*interior angle
may be on diagram*

M1

$$360 \div (180 - \text{their } 150)$$

or $360 \div 30$

M1dep

$$12$$

A1

Alternative method 3

$$\frac{360 - 60}{2} \text{ or } \frac{300}{2} \text{ or } 150$$

*interior angle
may be on diagram*

M1

$$180 \times (n - 2) = \text{their } 150 \times n$$

or $180n - \text{their } 150n = 360$

or $30n = 360$

oe equation

M1dep

$$12$$

A1

[3]

Q2.

(a) 180

Exact answer

(b) 6

B1

B1

(c) 135

Exact answer

B1

[3]

Q3.

$$(180 - 40) \div 2$$

or $180 - (40 \times 2)$

M1

(40 and) 40 and 100

Either order

A1

(40 and) 70 and 70

SC1 Two pairs of angles totalling 140

A1

[3]

Q4.

(Exterior angle =) $360 \div 6 (= 60)$

M1

$$180 - 60$$

A1

Alternative method 1

(interior angles =) 4×180
 8×90

M1

$$720 \div 6$$

A1

Alternative method 2

Showing the hexagon can be split into equilateral triangles and one angle of 60 shown or stated

M1

Showing $60 + 60$ at one vertex

A1

[2]

Q5.

$360 \div 20$ or $20 \times 18 = 360$
oe

M1

18

A1

Additional Guidance

If using interior angle method, must get as far as $360 \div 20$ for M1

[2]

Q6.

$$4x + 2x + 90 = 180$$

oe

60 and/or 30 in correct place on diagram

M1

$$4x + 2x = 180 - 90$$

$$\text{or } 6x = 90$$

$$\text{or } 4x = 60$$

$$\text{or } 2x = 30$$

oe

Collecting terms

M1dep

15

A1

[3]

Q7.

$$3x - 38 = 2x + 15$$

oe

M1

$$3x - 2x = 15 + 38$$

Collects terms oe

M1dep

53

A1

[3]

Q8.

Alternative method 1 of 2

$$PAB = 51$$

$$\text{or } PAD = 51$$

$$\text{or } APC = 180 - 51$$

$$\text{or } APC = 129$$

M1

$$ABP = 180 - 51 - \text{their } 51$$

$$\text{or } ABP = 180 - 102$$

$$\text{or } ABP = 78$$

$$\text{or } ADC = 180 - \text{their } 51 - \text{their } 51$$

$$ADC = 180 - 102$$

$$ADC = 78$$

$$PAB = 51 \text{ and } PAD = 51$$

$$\text{or } BAD = 102$$

M1dep

$$BCD = 180 - \text{their } 78$$

$$\text{or } BCD = 360 - \text{their } 129 - \text{their } 51 - \text{their } 78$$

$$\text{or } BCD = 360 - 258$$

$$\text{or } BCD = 102$$

$$\text{eg } BCD = (360 - 2 \times \text{their } 78) \div 2$$

$$\text{or } 4x = 180 - \text{their } 78$$

$$\text{or } 4x = 360 - \text{their } 129 - \text{their } 51 - \text{their } 78$$

$$\text{or } 4x = 360 - 258$$

$$\text{or } 4x = 102$$

$$\text{or } 4x = (360 - 2 \times \text{their } 78) \div 2$$

$$\text{or } 102 \div 4$$

oe

M1dep

25.5

A1

Alternative method 2 of 2

$$ABC = 180 - 3x - x$$

$$\text{or } ABC = 180 - 4x$$

$$\text{or } APC = 180 - 51$$

$$\text{or } APC = 129$$

M1

$$PAB = 2x$$

$$\text{or } APB = 2x$$

$$\text{or } 2x = 51$$

M1dep

$$51 \div 2$$

M1dep

25.5

A1

Additional Guidance

Angles must be labelled or shown on the diagram

[4]

Q9.

$$180 - 56 - 56 \text{ or } 68$$

$$2x + 56 + 56 + 90 = 360$$

oe

M1

$$90 - \text{their } 68 \text{ or } 22$$

$$360 - 56 - 56 - 90$$

$$2x = 360 - 112 - 90$$

M1dep

$$(180 - \text{their } 22) \div 2$$

$$\text{or } (360 - 56 - 56 - 90) \div 2$$

$$2x = 158$$

M1dep

79

A1

[4]

Q10.

(a) 40

B1

(b) $360 \div \text{their } 40$

M1

9

A1ft

[3]

Q11.

$$w + 40 = 72$$

May be on diagram

M1

($w =$) 32 seen

A1

$$2w = 64 \text{ or } 2w = 2 \times \text{their } 32 \text{ or third angle} = 72$$

$$\text{or } 2w + t + 72 = 180 \text{ oe}$$

M1

$$180 - 72 - 64 \text{ or } 180 - 72 - \text{their } 32 \times 2$$

$$\text{oe } 108 - 64$$

M1

44

A1

[5]

Q12.

Fully correct table

B1 for each correct decision in a row

B4

Additional Guidance

	Must be true	Cannot be true	Might be true
The triangle is equilateral			✓
The triangle has at least one other acute angle	✓		
The triangle is right-angled			✓
The other two angles are each less than 60°		✓	

Mark intention if crosses used
eg if a cross is the only mark in a row assume that is the answer

More than one tick in a row is choice for that decision

B0 for that row

[4]

Q13.

$$D = 260$$

May be on diagram

B1

$$A = 30$$

May be on diagram

B1

$$360 - (30 + \text{their } 260 + \text{their } 30)$$

oe

M1

$$40$$

ft their 260 and 30

A1ft

Alternative Method

$$S = 50 \text{ (and } R = 150)$$

B1 for R = 150

May be on diagram

B2

$$180 - (90 + \text{their } 50)$$

oe

M1

$$40$$

ft their 150 and 50

A1ft

Additional Guidance

MARK THE BEST EFFORT

Beware of 30, this must be linked to angle A unless clear method shown, e.g. $90 - 60 = 30$ is clearly angle A

Answer 40 from no working is zero marks

No ft from R to S

Beware of an incorrect method for finding S, e.g. $R = 160$ and $S = 50$ scores B0

[4]

Q14.

octagon

B1

[1]

Q15.

$$x + 115 + 140 + 50 = 360$$

$$\text{or } 360 - (115 + 140 + 50)$$

$$\text{or } 360 - 305$$

oe

M1

$$(x =) \quad 55$$

A1

$$(x + 15 =) \quad 70$$

ft their $55 + 15$

B1ft

$$180 - \text{their } 125 = 55$$

Angles must add up to 180

B1 ft

Isosceles

Must see three angles for the triangle

Q1ft

Additional Guidance

'their' 55 must come from a calculation.

55, 70, 55 isosceles

M1 A1 B1 B1 Q1

55, 80, 45 (adds up to 180) scalene

M1 A1 B0 B1ft Q1ft

$$360 - 305 = 65$$

65, 80, 35 (adds up to 180) scalene

M1 A0 B1ft B1ft Q1ft

[5]