

Angles

Foundation and Higher tiers | Total marks: 57

Marks

- M** Method mark, for a correct method. It can be implied by a correct answer.
- A** Accuracy mark, for a correct answer. It needs the method mark before it.
- B** A mark for a correct value or statement, with or without working.
- ft** Follow through: the mark is given for using an earlier wrong answer correctly.
- oe** Or equivalent.
- [a, b]** Any value from a to b inclusive.

Questions

Q	Skill	Spec	Tier	Grade	Calculator	Marks
1	Naming and describing angles	G1	Foundation	1	No	2
2	Angles at a point	G3	Foundation	2	No	2
3	Angles in a quadrilateral, a decision	G3	Foundation	2	No	2
4	Corresponding angles	G3	Foundation	3	No	2
5	Isosceles triangle with an exterior angle	G3	Foundation	3	No	3
6	Co-interior angles, spot the error	G3	Foundation	4	No	2
7	Forming an equation from angles in a triangle	G3 A17	Foundation	4	No	3
8	Exterior and interior angles of a regular polygon	G3	Foundation	4	No	4
9	Parallel lines and a triangle, with reasons	G3	Foundation	4	No	4
10	Angles in a regular pentagon, show that	G3	Foundation	5	No	3
11	Isosceles triangles, forming an equation	G6 G3	Common	6	No	4
12	Angle proof in a trapezium	G6	Common	6	No	3
13	Parallel lines with simultaneous equations	G3 A19	Common	6	No	5
14	Angles in a triangle with decimals	G3	Foundation	2	Yes	2
15	Angles at a point, equal parts	G3	Foundation	2	Yes	2
16	Exterior angle of a triangle, with reasons	G3	Foundation	3	Yes	3

Q	Skill	Spec	Tier	Grade	Calculator	Marks
17	Angles at a point in a ratio	G3 R5	Foundation	3	Yes	3
18	Interior angle of a regular polygon	G3	Foundation	4	Yes	3
19	Interior angle of a regular polygon, a decision	G3	Foundation	5	Yes	2
20	Angles in an irregular polygon	G3	Foundation	5	Yes	3
	Total					57

Question 1 G1 · Foundation · Grade 1 · 2 marks

Q	Answer	Mark	Comments
1(a)	PQR or RQP	B1	accept $\angle PQR$ or $\angle RQP$
1(b)	obtuse	B1	

Question 2 G3 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
2	83	B1	
	angles at a point add up to 360°	B1	oe, angles round a point make 360°

Question 3 G3 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
3	$82 + 115 + 97 + 74$ or 368	M1	
	No and 368 is not 360	A1	oe, accept 8° too many

Question 4 G3 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
4	58	B1	
	corresponding angles are equal	B1	do not accept F angles

Question 5 G3 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
5	$180 - 117$ or 63	M1	angle ACB, may be on the diagram
	$180 - 2 \times \text{their } 63$	M1	uses the two equal base angles
	54	A1	

Question 6 G3 · Foundation · Grade 4 · 2 marks

Q	Answer	Mark	Comments
6(a)	co-interior angles add up to 180° (they are not equal)	B1	oe
6(b)	109	B1	

Question 7 G3 A17 · Foundation · Grade 4 · 3 marks

Q	Answer	Mark	Comments
7	$x + 15 + 2x + 3x - 27 = 180$	M1	oe
	$6x = 192$ or $x = 32$	M1	oe
	69	A1	

Question 8 G3 · Foundation · Grade 4 · 4 marks

Q	Answer	Mark	Comments
8(a)	$360 \div 24$	M1	
	15	A1	
8(b)	$(\text{their } 15 - 2) \times 180$ or $\text{their } 15 \times 156$	M1	oe
	2340	A1ft	ft their number of sides

Question 9 G3 · Foundation · Grade 4 · 4 marks

Q	Answer	Mark	Comments
9	angle EFG = 64 or angle EGF = 62	M1	may be on the diagram
	$180 - 64 - 62$	M1	oe, both angles found
	a full set of correct reasons for the method used	B1	for example alternate angles are equal, angles on a straight line add up to 180° and angles in a triangle add up to 180°
	54	A1	

Question 10 G3 · Foundation · Grade 5 · 3 marks

Q	Answer	Mark	Comments
10	interior angle = $(5 - 2) \times 180 \div 5$ or 108	M1	oe, or exterior angle 72 and $180 - 72$
	$(180 - 108) \div 2$ or 36 for angle BAC or angle DAE	M1	triangle ABC is isosceles
	$108 - 36 - 36 = 36$	A1	a full method with no errors

Question 11 G6 G3 · Common · Grade 6 · 4 marks

Q	Answer	Mark	Comments
11	angle ABC = angle ACB = angle DAC	M1	may be shown as one letter on the diagram, such as c
	$66 + c + c + c = 180$	M1	oe, angles in triangle ABC
	$c = 38$	A1	
	76	A1ft	ft $2 \times \text{their } c$ or $180 - 66 - \text{their } c$

Question 12 G6 · Common · Grade 6 · 3 marks

Q	Answer	Mark	Comments
12	angle DAC = angle DCA	M1	base angles of an isosceles triangle (AD = DC) are equal
	angle DCA = angle CAB	M1	alternate angles are equal (AB is parallel to DC)
	angle DAC = angle CAB so AC bisects angle DAB	A1	a full proof with both reasons

Question 13 G3 A19 · Common · Grade 6 · 5 marks

Q	Answer	Mark	Comments
13	$3x + y = 4x - y$	M1	oe, corresponding angles are equal
	$4x - y + 2x - 2y = 180$	M1	oe, angles on a straight line
	a correct method to eliminate one letter	M1	such as $x = 2y$ substituted to give $9y = 180$
	$x = 40$	A1	
	$y = 20$	A1	

Question 14 G3 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
14	$180 - 48.7 - 63.45$ or $180 - 112.15$	M1	oe
	67.85	A1	

Question 15 G3 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
15	$360 \div 7$	M1	oe
	51.4	A1	accept 51.4 or [51.42, 51.43]

Question 16 G3 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
16	$180 - 131.45$ or 48.55 for angle ACB, or $131.45 - 57.8$	M1	may be on the diagram
	73.65	A1	
	angles on a straight line add up to 180° and angles in a triangle add up to 180°	B1	oe, or the exterior angle of a triangle equals the sum of the two opposite interior angles

Question 17 G3 R5 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
17	$5 + 6 + 8$ or 19	M1	
	$360 \div 19 \times 8$	M1	oe
	151.6	A1	accept 151.6 or [151.57, 151.58]

Question 18 G3 · Foundation · Grade 4 · 3 marks

Q	Answer	Mark	Comments
18	$360 \div 14$ or 25.7...	M1	oe, the exterior angle, or $(14 - 2) \times 180$ or 2160
	$180 -$ their 25.7... or their $2160 \div 14$	M1	oe
	154.3	A1	accept 154.3 or [154.28, 154.29]

Question 19 G3 · Foundation · Grade 5 · 2 marks

Q	Answer	Mark	Comments
19	$180 - 155 = 25$ and $360 \div 25$	M1	oe, or $(n - 2) \times 180 = 155n$
	No and 14.4	A1	oe, a correct conclusion from 14.4

Question 20 G3 · Foundation · Grade 5 · 3 marks

Q	Answer	Mark	Comments
20	$180 - 110 = 70$ and $180 - 151 = 29$	M1	exterior angles, or $(n - 2) \times 180 = 110 + 151(n - 1)$
	$(360 - 70) \div 29$ or 10	M1	oe, or $29n = 319$
	11	A1	