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GCSE Mathematics

The Sine Rule

Mark Scheme - Higher Tier | Grades 6-8

M = method mark, A = accuracy mark (dependent on the preceding M mark), B = independent mark.

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Edexcel-style questions

Q1 Grade 6 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	b / sin 65° = 10 / sin 40°	M1
(a)	b = 10 × sin 65° ÷ sin 40°	M1
(a)	b = 14.1 cm (3 s.f.)	A1

Q2 Grade 7 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	sin B / 11 = sin 45° / 9	M1
(a)	sin B = 11 × sin 45° ÷ 9	M1
(a)	B = 59.8° (1 d.p.)	A1

Q3 Grade 7 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	angle C = 180° - 50° - 60° = 70°	M1
(a)	c / sin 70° = 8 / sin 50°	M1
(a)	c = 9.81 cm (3 s.f.)	A1

Q4 Grade 6 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	two sides and the included angle are known (SAS)	M1
(a)	cosine rule	A1

Q5 Grade 8 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	angle R = 180° - 52° - 71° = 57°	M1
(a)	QR / sin 52° = 45 / sin 57°	M1
(a)	QR = 42.3 m (3 s.f.)	A1

AQA-style questions

Q6 Grade 6 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	b / sin 70° = 12 / sin 50°	M1
(a)	b = 12 × sin 70° ÷ sin 50°	M1
(a)	b = 14.7 cm (3 s.f.)	A1

Q7 Grade 7 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	sin B / 10 = sin 38° / 7	M1
(a)	sin B = 10 × sin 38° ÷ 7	M1
(a)	B = 61.6° (1 d.p.)	A1

Q8 Grade 7 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	angle C = 180° - 42° - 68° = 70°	M1
(a)	c / sin 70° = 9 / sin 42°	M1
(a)	c = 12.6 cm (3 s.f.)	A1

Q9 Grade 6 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	two angles and a side are known	M1
(a)	sine rule	A1

Q10 Grade 8 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	angle R = 180° - 48° - 63° = 69°	M1
(a)	QR / sin 48° = 38 / sin 69°	M1
(a)	QR = 30.2 m (3 s.f.)	A1

OCR-style questions

Q11 Grade 6 OCR style

Total: 3

Part	Mark scheme	Marks
(a)	b / sin 80° = 8 / sin 35°	M1
(a)	b = 8 × sin 80° ÷ sin 35°	M1
(a)	b = 13.7 cm (3 s.f.)	A1

Q12 Grade 7 OCR style

Total: 3

Part	Mark scheme	Marks
(a)	sin B / 12 = sin 60° / 14	M1
(a)	sin B = 12 × sin 60° ÷ 14	M1
(a)	B = 47.9° (1 d.p.)	A1

Q13 Grade 8 OCR style

Total: 3

Part	Mark scheme	Marks
(a)	angle C = 180° - 55° - 45° = 80°	M1
(a)	c / sin 80° = 11 / sin 55°	M1
(a)	c = 13.2 cm (3 s.f.)	A1

Q14 Grade 7 OCR style

Total: 2

Part	Mark scheme	Marks
(a)	all three sides are known and no angle is known (SSS)	M1
(a)	cosine rule	A1

Q15 Grade 8 OCR style

Total: 3

Part	Mark scheme	Marks
(a)	angle R = 180° - 60° - 55° = 65°	M1
(a)	QR / sin 60° = 52 / sin 65°	M1
(a)	QR = 49.7 m (3 s.f.)	A1

Teachably-style questions

Q16 Grade 6 Teachably style — Total: 3

Part	Mark scheme	Marks
(a)	b / sin 60° = 15 / sin 55°	M1
(a)	b = 15 × sin 60° ÷ sin 55°	M1
(a)	b = 15.9 cm (3 s.f.)	A1

Q17 Grade 7 Teachably style — Total: 3

Part	Mark scheme	Marks
(a)	sin B / 13 = sin 48° / 10	M1
(a)	sin B = 13 × sin 48° ÷ 10	M1
(a)	B = 75.0° (1 d.p.)	A1

Q18 Grade 8 Teachably style — Total: 3

Part	Mark scheme	Marks
(a)	angle C = 180° - 38° - 97° = 45°	M1
(a)	c / sin 45° = 6 / sin 38°	M1
(a)	c = 6.89 cm (3 s.f.)	A1

Q19 Grade 7 Teachably style — Total: 2

Part	Mark scheme	Marks
(a)	a side and its opposite angle are known, plus another side	M1
(a)	sine rule	A1

Q20 Grade 8 Teachably style — Total: 3

Part	Mark scheme	Marks
(a)	angle R = 180° - 44° - 82° = 54°	M1
(a)	QR / sin 44° = 29 / sin 54°	M1
(a)	QR = 24.9 m (3 s.f.)	A1

END OF PAPER

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