
GCSE Mathematics

Congruence

Mark Scheme - GCSE Maths Practice

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

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Edexcel-style questions

Q1 Grade 5 Edexcel style

Total: 1

Part	Mark scheme	Marks
(a)	SSS (side, side, side)	A1

Q2 Grade 5 Edexcel style

Total: 1

Part	Mark scheme	Marks
(a)	DE corresponds to AB, so $DE = 6$ cm	A1

Q3 Grade 6 Edexcel style

Total: 4

Part	Mark scheme	Marks
(a)	$AB = CD$ (given)	B1
(a)	$BC = AD$ (given)	B1
(a)	$AC = CA$ (common side)	B1
(a)	triangle $ABC \cong$ triangle CDA (SSS)	A1

Q4 Grade 6 Edexcel style

Total: 4

Part	Mark scheme	Marks
(a)	$AB = AC$ (given)	B1
(a)	$BM = CM$ (M is the midpoint of BC)	B1
(a)	$AM = AM$ (common side)	B1
(a)	triangle $ABM \cong$ triangle ACM (SSS), so angle $BAM =$ angle CAM : AM bisects angle BAC	A1

Q5 Grade 7 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	the given angle (30°) is not included between the two given sides (it is opposite one of them), so this is the SSA case	B1
(a)	SSA is not a valid congruence condition: the side BC can "swing" to meet two different possible positions for C, giving two different triangles that both satisfy the same SSA data, so the triangles need not be congruent	A1

AQA-style questions

Q6 Grade 5 AQA style

Total: 1

Part	Mark scheme	Marks
(a)	SAS (side, angle, side)	A1

Q7 Grade 5 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	angle C = $180 - 50 - 70 = 60^\circ$	M1
(a)	angle F corresponds to angle C, so angle F = 60°	A1

Q8 Grade 6 AQA style

Total: 4

Part	Mark scheme	Marks
(a)	AB = AC (given)	B1
(a)	angle BAD = angle CAD (AD bisects angle BAC, given)	B1
(a)	AD = AD (common side)	B1
(a)	triangle ABD $\cong$ triangle ACD (SAS)	A1

Q9 Grade 7 AQA style

Total: 4

Part	Mark scheme	Marks
(a)	AB = AD (given)	B1
(a)	CB = CD (given)	B1
(a)	AC = AC (common side)	B1
(a)	triangle ABC $\cong$ triangle ADC (SSS), so angle BAC = angle DAC: AC bisects angle BAD	A1

Q10 Grade 7 AQA style

Total: 4

Part	Mark scheme	Marks
(a)	AX = CX (given) and BX = DX (given)	B1
(a)	angle AXB = angle CXD (vertically opposite angles)	B1
(a)	triangle AXB $\cong$ triangle CXD (SAS)	A1
(a)	so angle XAB = angle XCD; these are alternate angles between AB and CD, so AB is parallel to CD	A1

OCR-style questions

Q11 Grade 5 OCR style**Total: 1**

Part	Mark scheme	Marks
(a)	ASA (angle, side, angle)	A1

Q12 Grade 6 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	the correspondence is $A \leftrightarrow F$, $B \leftrightarrow E$, $C \leftrightarrow D$, so DF corresponds to CA	M1
(a)	DF = 7 cm	A1

Q13 Grade 6 OCR style**Total: 4**

Part	Mark scheme	Marks
(a)	AX = DX (given)	B1
(a)	BX = CX (given)	B1
(a)	angle AXB = angle DXC (vertically opposite angles)	B1
(a)	triangle AXB $\cong$ triangle DXC (SAS)	A1

Q14 Grade 7 OCR style**Total: 4**

Part	Mark scheme	Marks
(a)	AB = CD (opposite sides of a parallelogram)	B1
(a)	angle OAB = angle OCD (alternate angles, AB parallel to CD)	B1
(a)	angle OBA = angle ODC (alternate angles, AB parallel to CD)	B1
(a)	triangle AOB $\cong$ triangle COD (ASA), so AO = CO and BO = DO: the diagonals bisect each other	A1

Q15 Grade 7 OCR style**Total: 4**

Part	Mark scheme	Marks
(a)	the two towers are equal in height (given), and the two wires are equal in length (given, and each is the hypotenuse of its triangle)	B1
(a)	each triangle has a right angle where the wire meets the top of its tower	B1
(a)	the triangles are congruent (RHS)	A1
(a)	since corresponding sides of congruent triangles are equal, each peg must be the same distance from the base of its own tower	A1

Teachably-style questions

Q16 Grade 5 Teachably style

Total: 1

Part	Mark scheme	Marks
(a)	RHS (right angle, hypotenuse, side)	A1

Q17 Grade 6 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	$3x - 1 = 11$, so $x = 4$	M1
(a)	$BC = 2(4) + 5 = 13$ cm	A1

Q18 Grade 6 Teachably style

Total: 4

Part	Mark scheme	Marks
(a)	angle BAC = angle BAD (given)	B1
(a)	$AB = AB$ (common side)	B1
(a)	angle ABC = angle ABD (given)	B1
(a)	triangle ABC $\cong$ triangle ABD (ASA)	A1

Q19 Grade 6 Teachably style

Total: 4

Part	Mark scheme	Marks
(a)	$AB = DC$ (opposite sides of a rectangle)	B1
(a)	angle ABC = angle DCB = 90° (angles of a rectangle)	B1
(a)	$BC = CB$ (common side)	B1
(a)	triangle ABC $\cong$ triangle DCB (SAS), so $AC = DB$	A1

Q20 Grade 7 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	corresponding angles of congruent triangles are equal: $2x + 10 = 3x - 5$	M1
(a)	$x = 15$	M1
(a)	angle ABE = $2(15) + 10 = 40^\circ$	A1

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