

GCSE MATHS

Congruence and geometric proof

Answers

- Q1** SSS.
- Q2** SAS.
- Q3** ASA.
- Q4** RHS.
- Q5** No: they may have different side lengths and only be similar.
- Q6** No. Two sides and a non-included angle are not enough; the third vertex may have two possible positions.
- Q7** 7 cm.
- Q8** 52° .
- Q9** QR .
- Q10** 5.
- Q11** 11 cm.
- Q12** 30° .
- Q13** **(a)** $AB = AC$, $BM = CM$ and AM is common: SSS. **(b)** Triangles ABM and ACM are congruent by SSS, so angles BAM and MAC are equal. **(c)** SSS gives equal angles AMB and AMC . They total 180° , so each is 90° .
- Q14** $AB = AC$, AD is common and angles BAD and DAC are equal: SAS, hence $BD = DC$.
- Q15** **(a)** $PA = PB$, $QA = QB$ and PQ is common: SSS. **(b)** SSS gives triangles PAQ and PBQ congruent; corresponding angles APQ and QPB are equal.
- Q16** Two alternate-angle pairs are equal and AC is common: ASA.
- Q17** Triangles ABC and CDA are congruent by ASA; their corresponding sides AB and CD are equal.
- Q18** Triangles ABO and CDO are congruent by ASA using parallel lines and $AB = CD$; hence $AO = CO$.
- Q19** Triangles AOB and COD are congruent by SAS; equal alternate angles imply AB is parallel to CD .
- Q20** Triangles ABC and ADC are congruent by SSS; angles BAC and CAD are equal.
- Q21** Triangles ABE and ACD are congruent by SAS: $AB = AC$, $AE = AD$ and the included angle at A is common.