GCSE HIGHER · REVISION MAT 4

Congruence and geometric proof

1 Two triangles have angles 35° and 75°, and the side opposite 75° is 9 cm in both.

Which condition shows they are congruent?

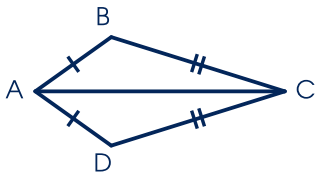
2 Name the congruence condition: two sides and the angle between them.

3 Two triangles have all three angles equal.

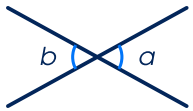
Explain why they need not be congruent.

4 ABCD is a kite with AB = AD and CB = CD.

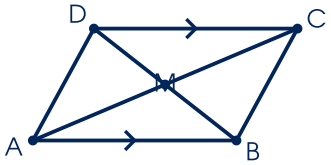
Prove that triangles ABC and ADC are congruent.



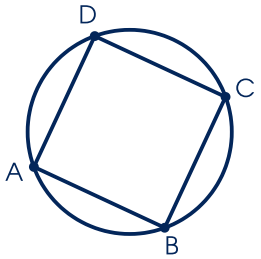
5 Prove that vertically opposite angles are equal.



6 Prove that the diagonals of a parallelogram bisect each other.

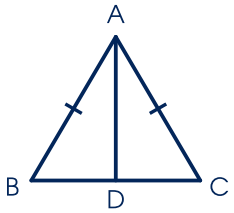


7 Prove that opposite angles of a cyclic quadrilateral add up to 180°.



8 In triangle ABC, AB = AC. D is the midpoint of BC.

Prove that AD is perpendicular to BC.



ANSWERS · REVISION MAT 4

Congruence and geometric proof

1 **AAS (ASA)**

2 **SAS**

3 **One could be an enlargement of the other.**

4 AB = AD, CB = CD, AC common

Congruent by SSS

5 $a + b = 180$ and
$b + c = 180$ (straight lines)

So $a = c$

6 AB = DC, alternate angles equal

Triangles ABM and
CDM congruent (ASA)

AM = MC and BM = MD

7 Angles at the
centre are 2A and 2C

2A + 2C = 360°

A + C = 180°

8 Triangles ABD and
ACD congruent (SSS)

Angle ADB = angle ADC,
and they add to 180°

Each is 90°

Mr&Mrs MATHS