Chapter 1

Congruent Triangle Proofs

1.

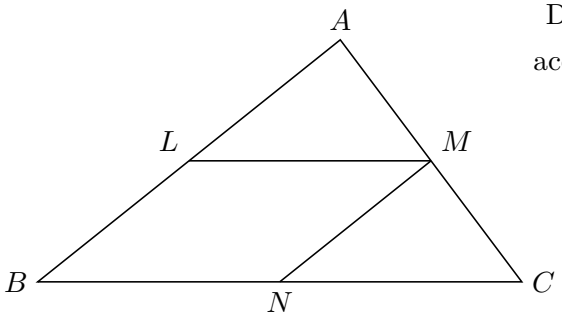

Diagram **NOT** accurately drawn

The diagram shows a triangle ABC.

$LMNB$ is a parallelogram where L is the midpoint of AB, M is the midpoint of AC, and N is the midpoint of BC.

Prove that triangle ALM and triangle MNC are congruent. You must give reasons for each stage of your proof.

2.

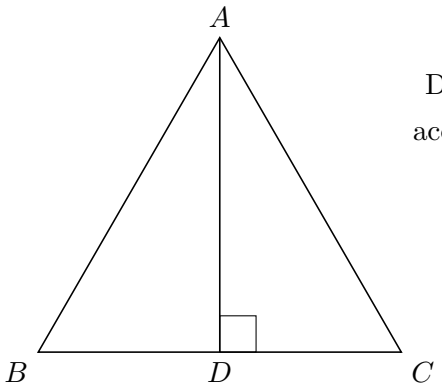

Diagram **NOT** accurately drawn

ABC is an equilateral triangle. D lies on BC. AD is perpendicular to BC.

(a) Prove that triangle ADC is congruent to triangle ADB. **(3)**

(b) Hence, prove that $BD = \frac{1}{2}AD$. **(2)**

3. **(3)**

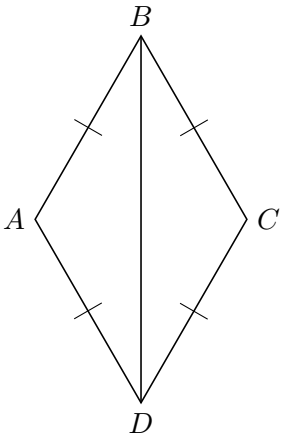

Diagram **NOT** accurately drawn

In the diagram, $AB = BC = CD = DA$.

Prove that the triangle ADB is congruent to triangle CDB.

4.

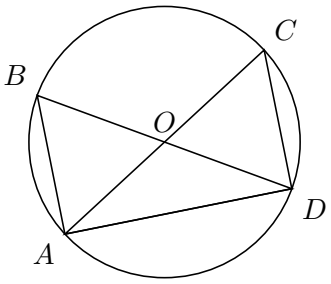

Diagram **NOT** accurately drawn

AOC and BOD are diameters of a circle, centre O. Prove that triangle ABD and triangle DCA are congruent.

5.

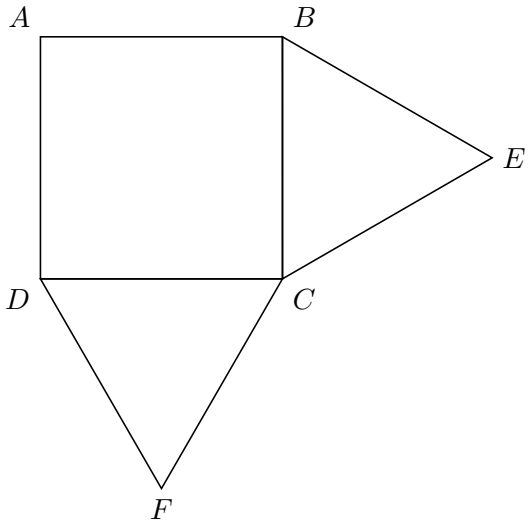

Diagram **NOT** accurately drawn

$ABCD$ is a square. BEC and DCF are equilateral triangles.

(a) Prove that triangle ECD is congruent to triangle BFC. **(3)**

G is the point such that $BEGF$ is a parallelogram.

(b) Prove that $ED = EG$.