Congruent Triangles

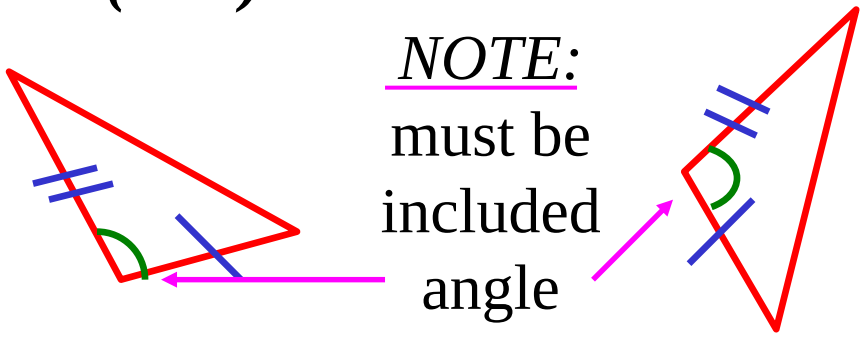
In order to prove congruent triangles you require three pieces of information.

Hint: Look for a side that is the same in both triangles first.

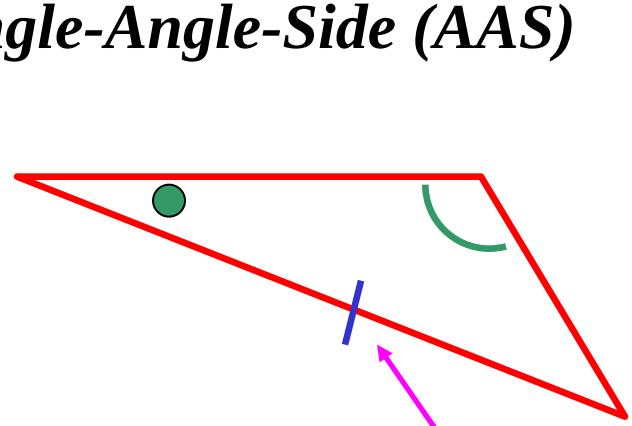
TESTS

(1) Side-Side-Side (SSS)

(2) Side-Angle-Side (SAS)

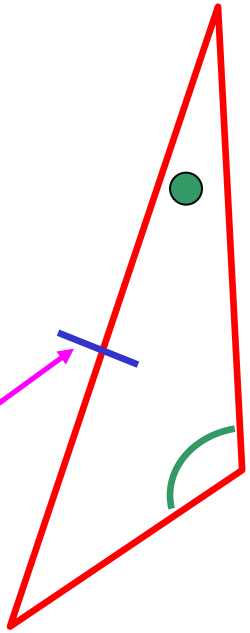


(3) Angle-Angle-Side (AAS)

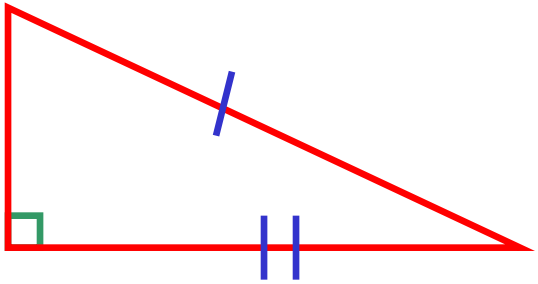


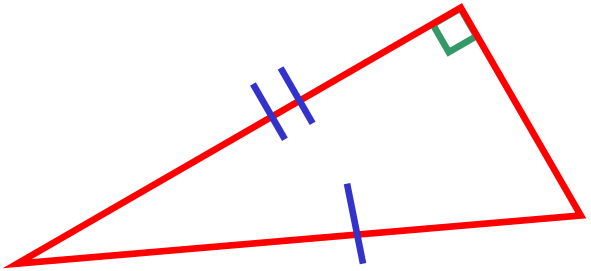
NOTE:

sides must be in the same position

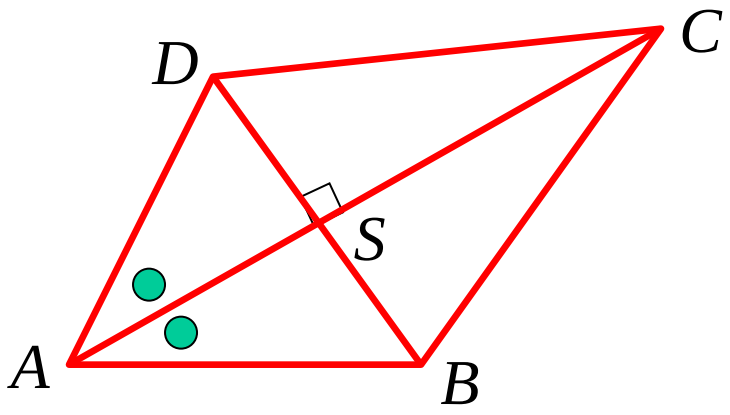


(4) Right Angle-Hypotenuse-Side (RHS)





e.g. (1985)



In the diagram $ABCD$ is a quadrilateral. The diagonals AC and BD intersect at right angles, and $\angle DAS = \angle BAS$

(*i*) Prove $DA = AB$

$\angle DAS = \angle BAS$	$(\text{given})(A)$
AS is common	(S)
$\angle DSA = \angle BSA = 90^\circ$	$(\text{given})(A)$
$\therefore \Delta DAS \equiv \Delta BAS$	(AAS)
$\therefore DA = AB$	$(\text{matching sides in } \equiv \Delta\text{'s})$

(*ii*) Prove $DC = CB$

$DA = AB$ (proven)(S)

$\angle DAS = \angle BAS$ (given)(A)

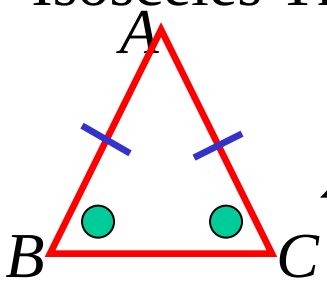
AC is common (S)

$\therefore \Delta DAC \equiv \Delta BAC$ (SAS)

$\therefore DC = CB$ (matching sides in $\equiv \Delta$'s)

Types Of Triangles

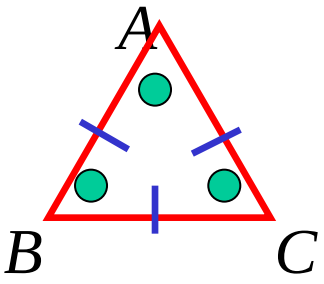
Isosceles Triangle



$AB = AC$ $(=$ sides in isosceles $\Delta ABC)$

$\angle B = \angle C$ $(= \angle$'s in isosceles $\Delta ABC)$

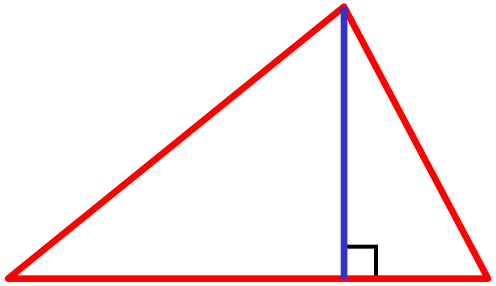
Equilateral Triangle



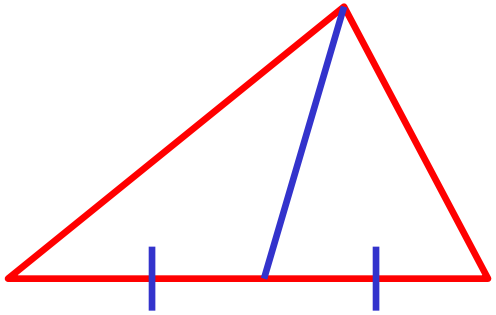
$AB = AC = BC$ (sides in equilateral ΔABC)

$\angle A = \angle B = \angle C = 60^\circ$ $(\angle$'s in equilateral $\Delta ABC)$

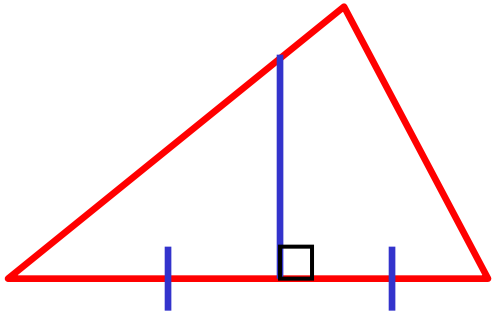
Triangle Terminology



Altitude: (perpendicular height)
Perpendicular from one side passing through the vertex



Median: Line joining vertex to the midpoint of the opposite side



Right Bisector: Perpendicular drawn from the midpoint of a side

Exercise 8C; 2, 4beh, 5, 7, 11a, 16, 18, 19a, 21, 22, 26