CLASSIFYING TRIANGLES

(LESSON 4.1 & 4.2)

Chapter 4: Lesson 4.1 & 4.2
Classifying Triangles

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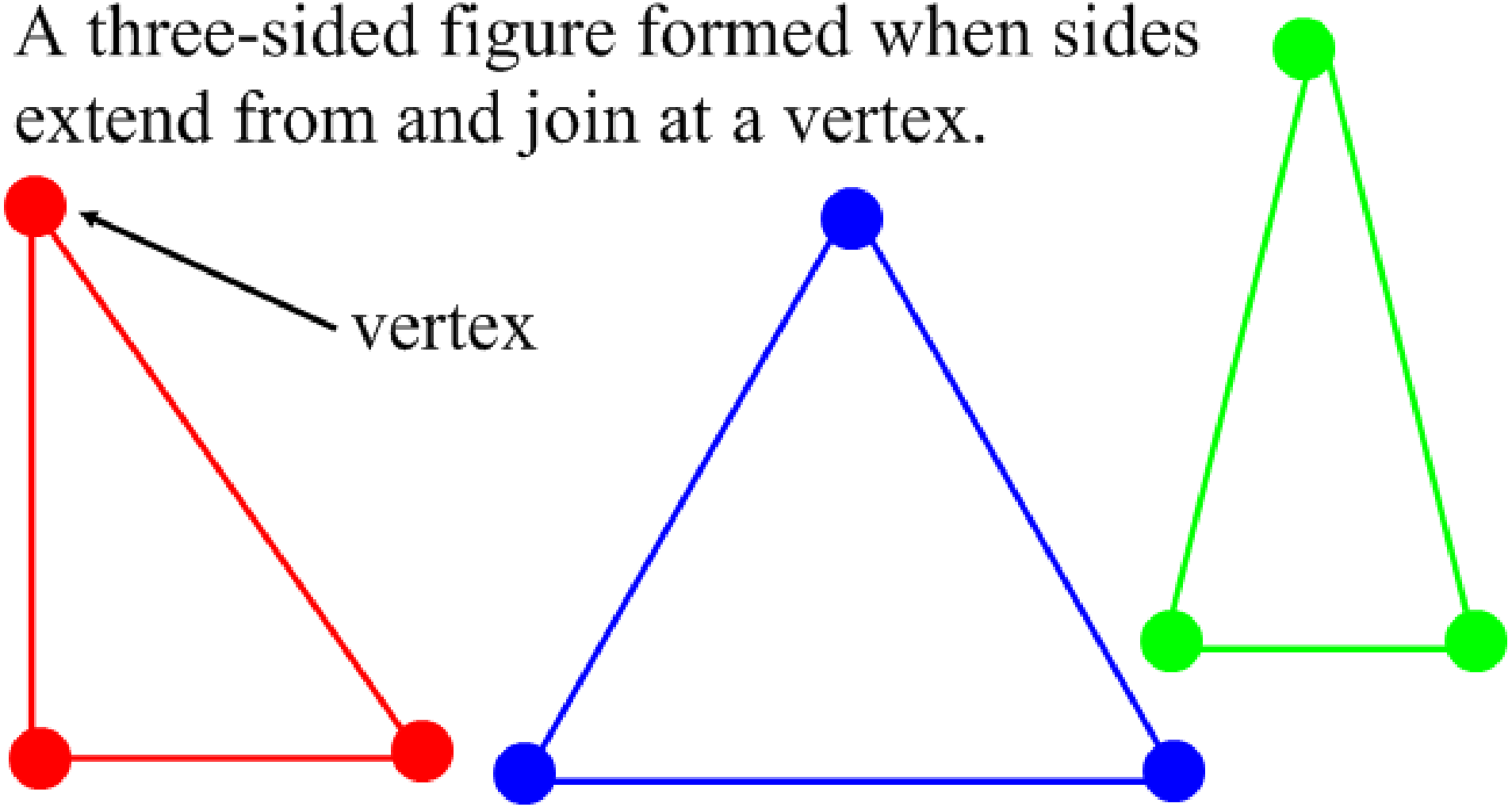
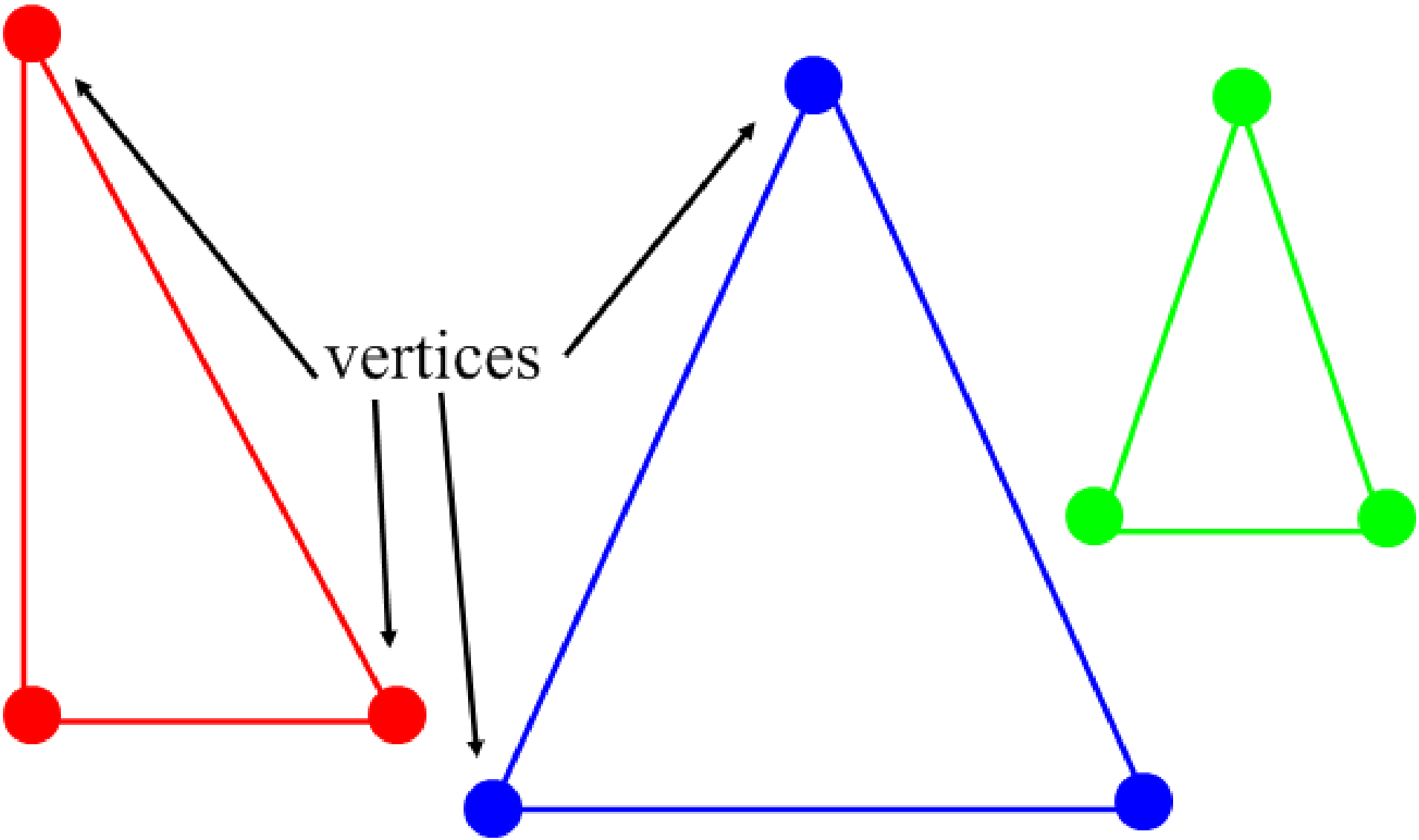
1. TRIANGLE:
A three-sided figure formed when sides extend from and join at a vertex.



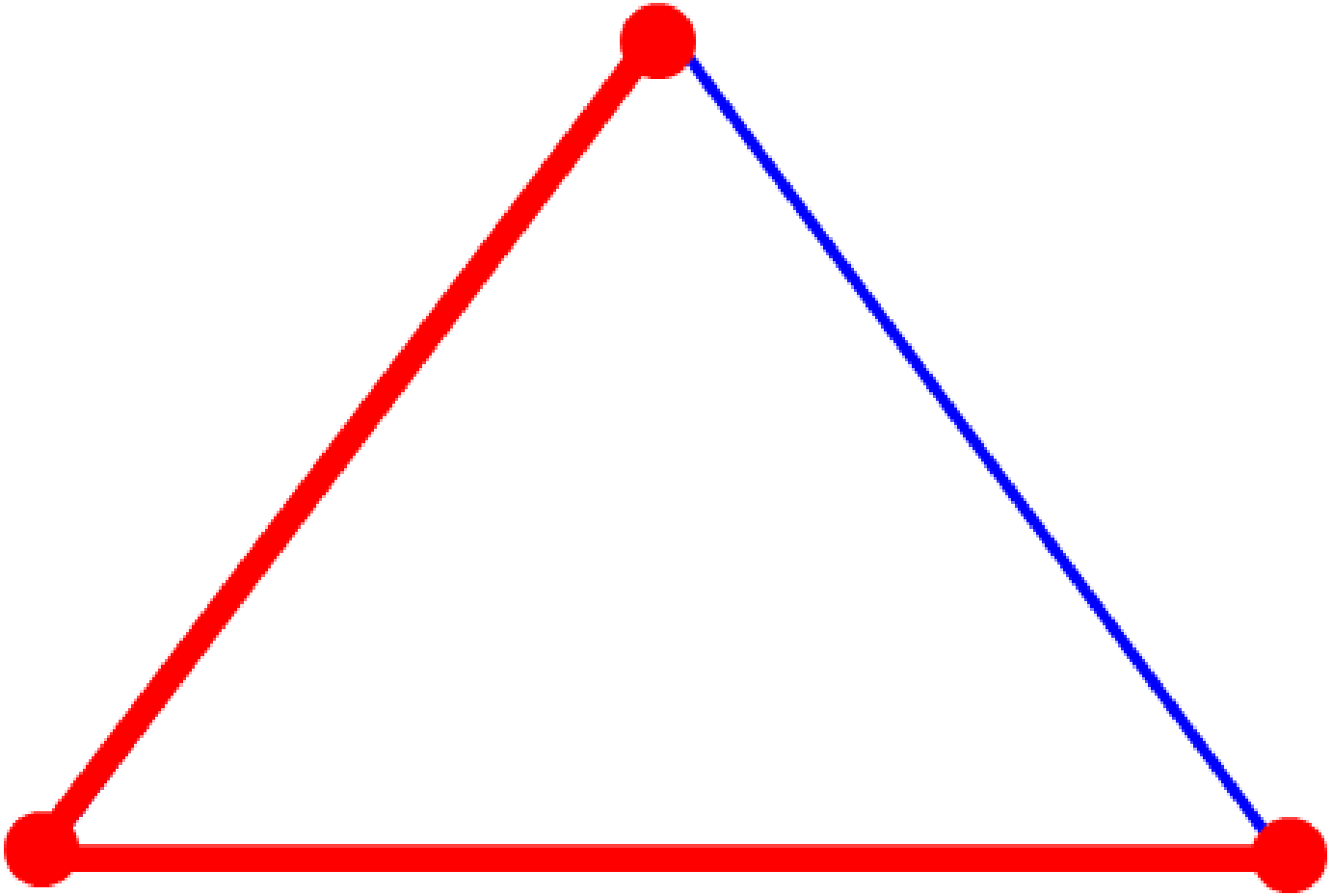
2. VERTEX (VERTICES):

The 3 points joining the sides of a triangle.

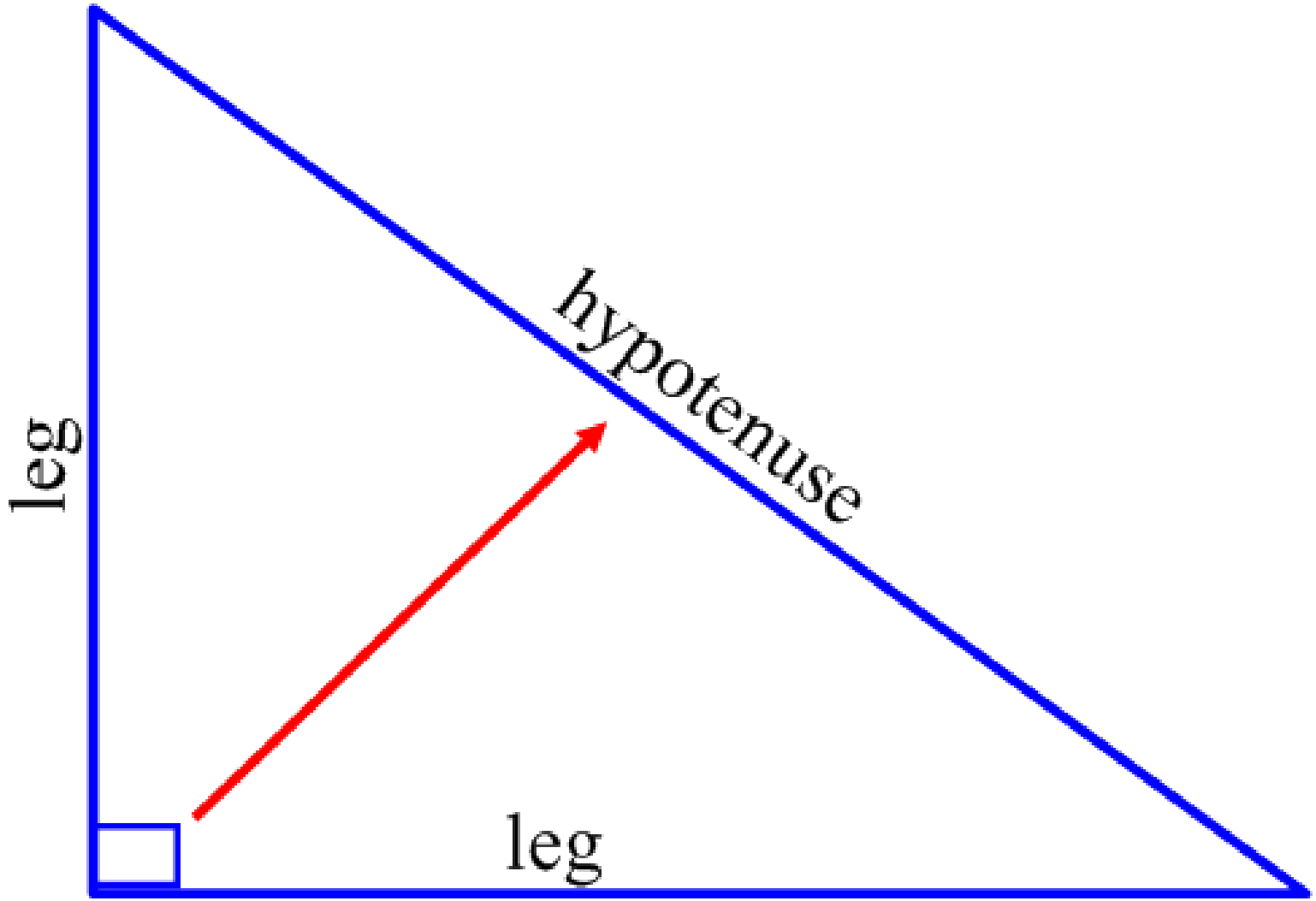


3. ADJACENT SIDES:

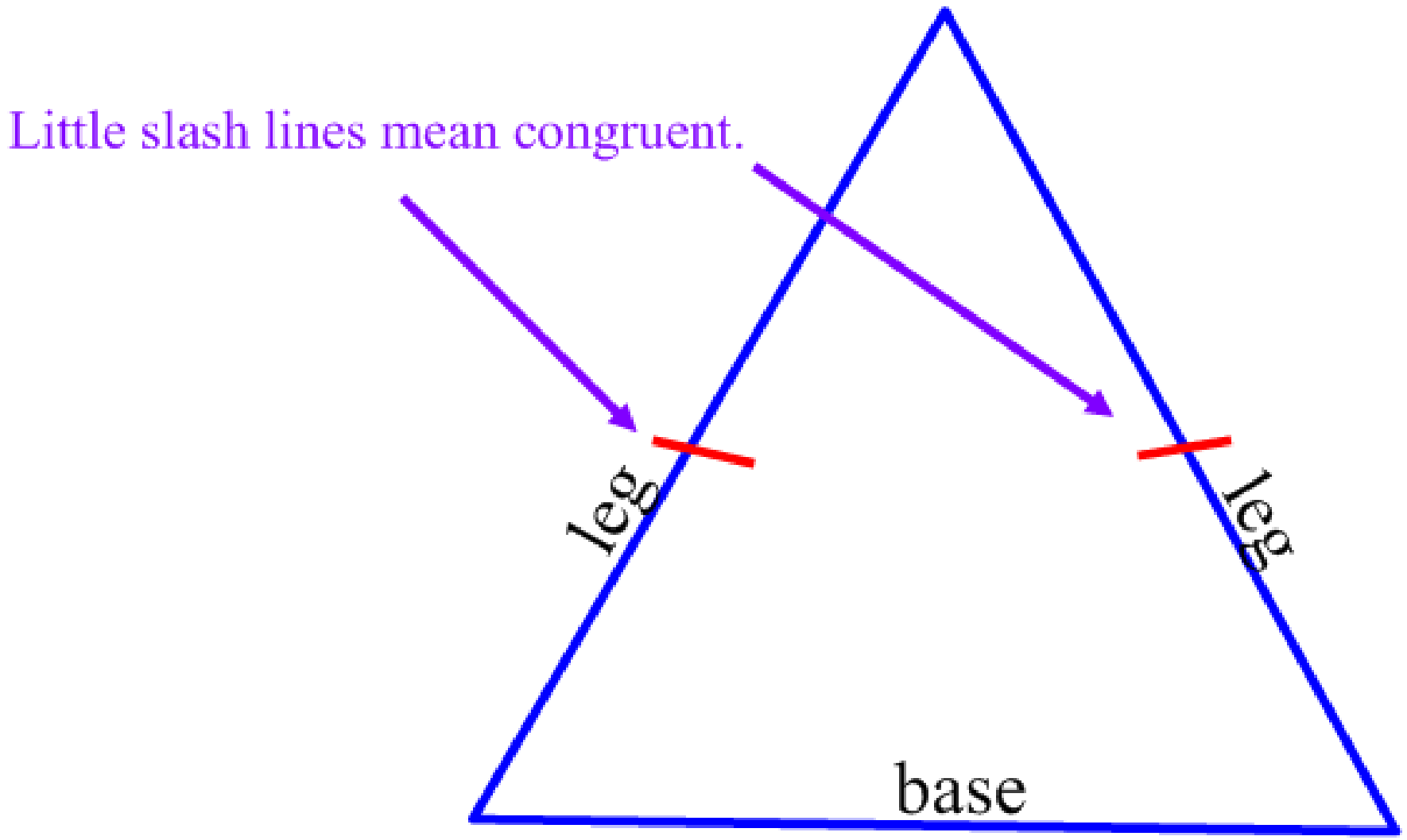
Two sides of a triangle sharing a common vertex.



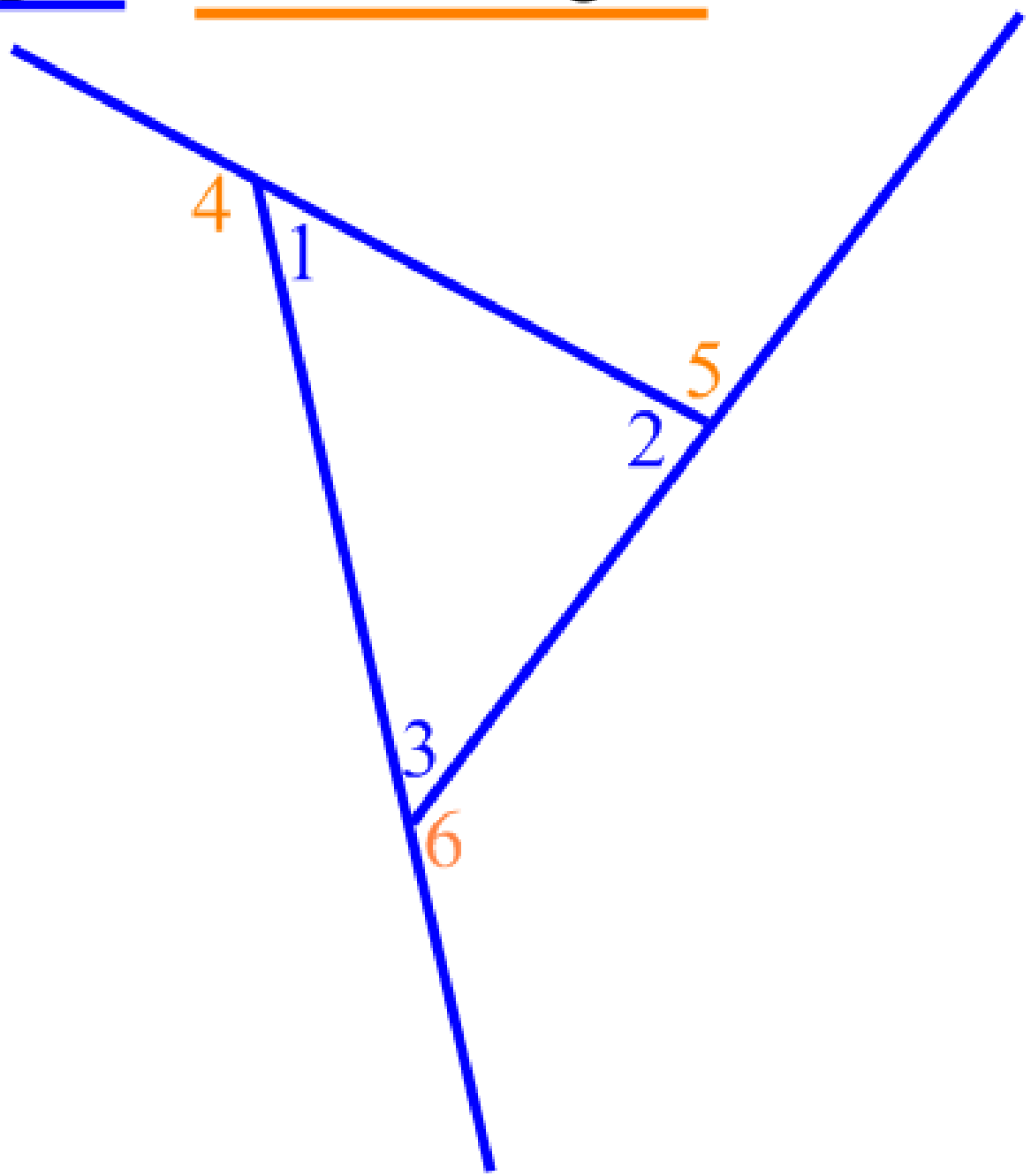
4. In a right triangle, the sides that form the right angle are the legs. The side opposite the right angle is the hypotenuse.



5. In an isosceles triangle, the 2 congruent sides are called the legs.
The 3rd side is called the base.

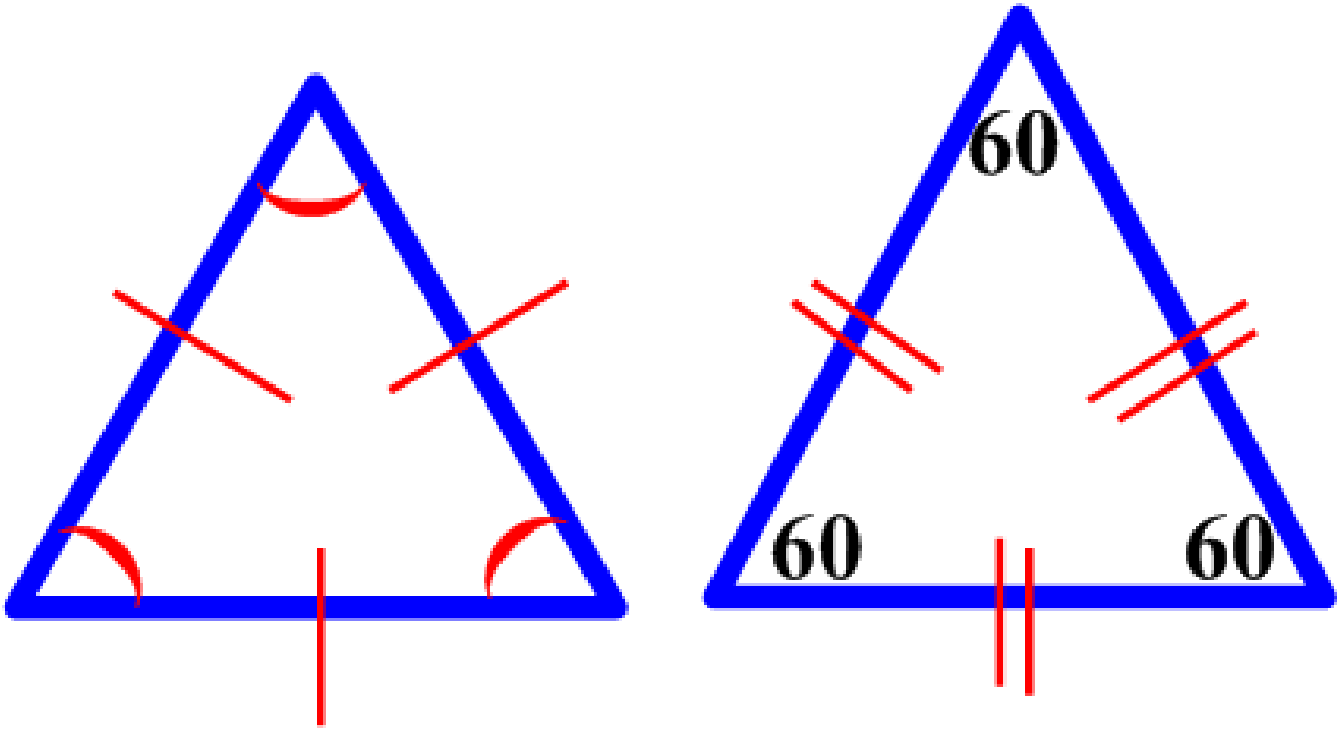


6. Interior angles / Exterior angles:



7. A triangle is equilateral if it is equiangular.
   A triangle is equiangular if it is equilateral.

Each angle of an equilateral triangle measures 60.



8. If two sides of a triangle are congruent,
then the angles opposite those sides are congruent.
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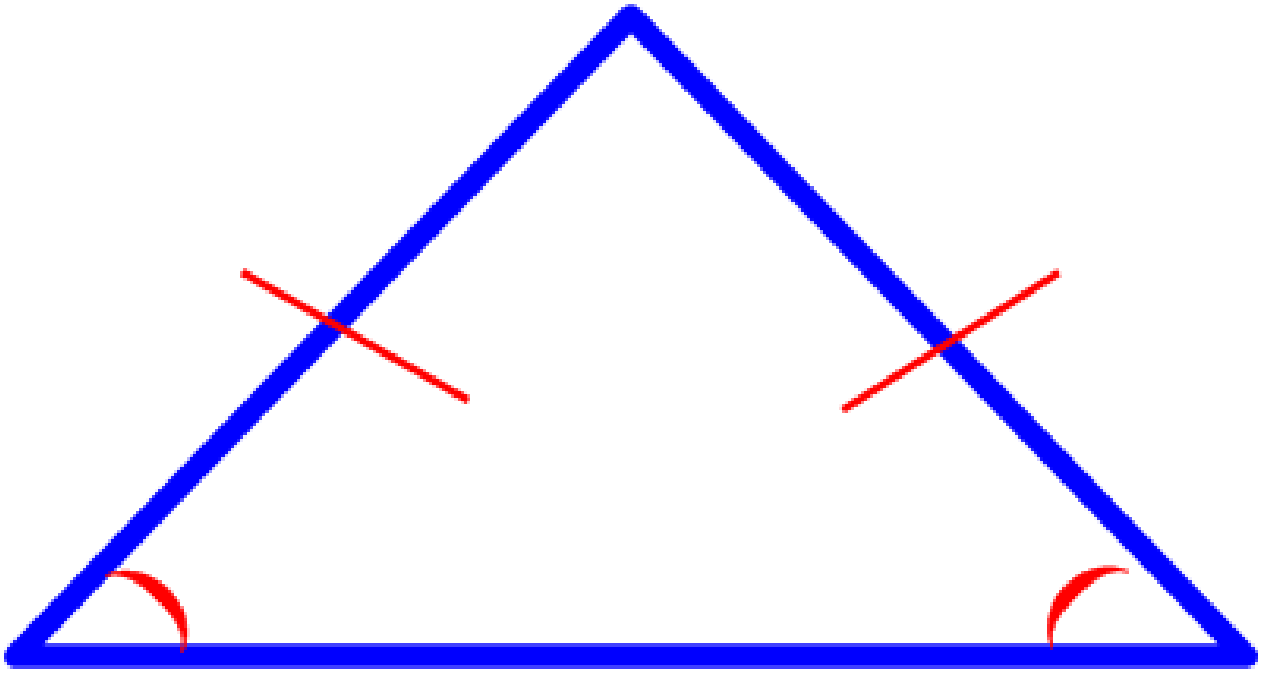
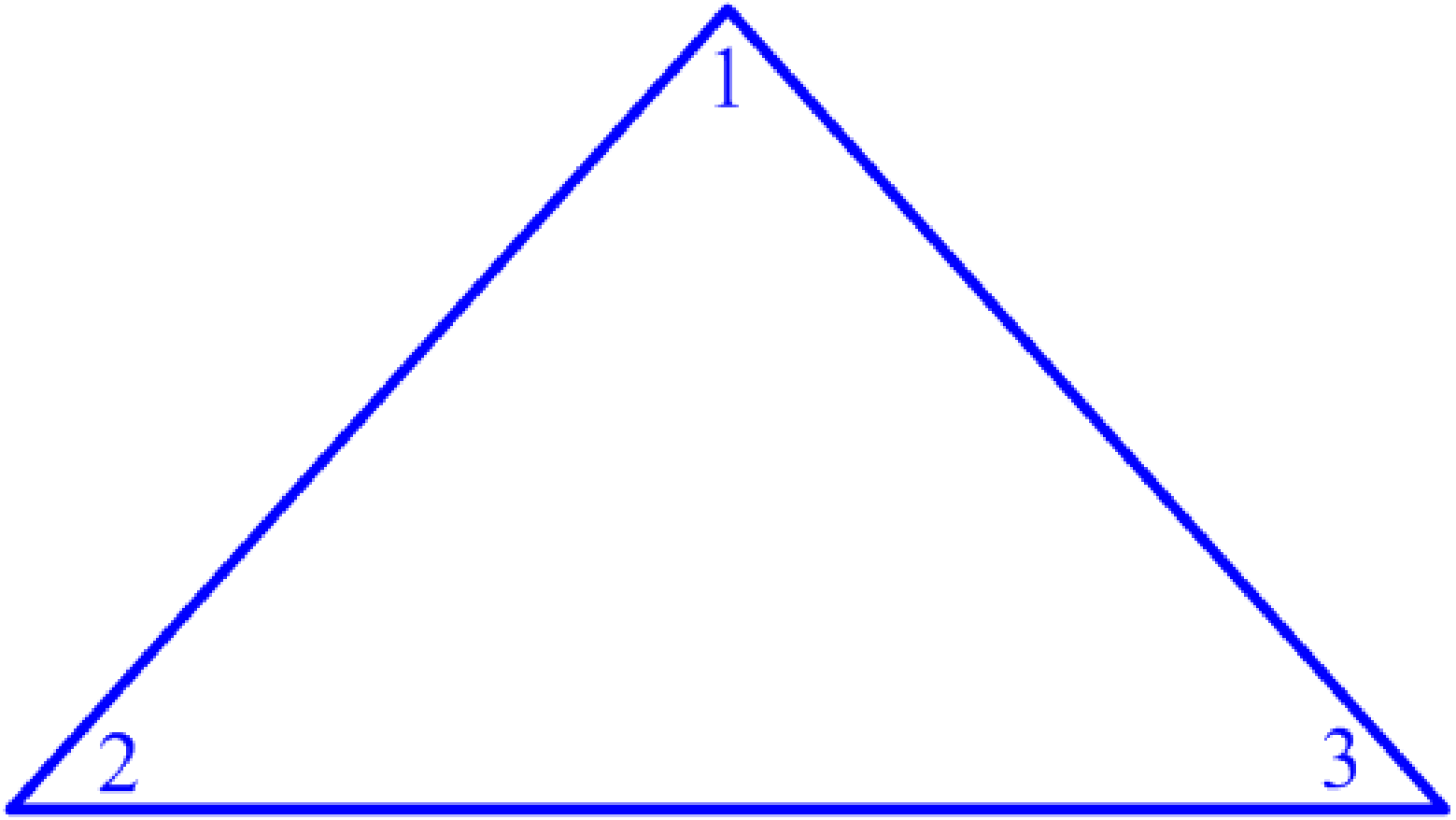


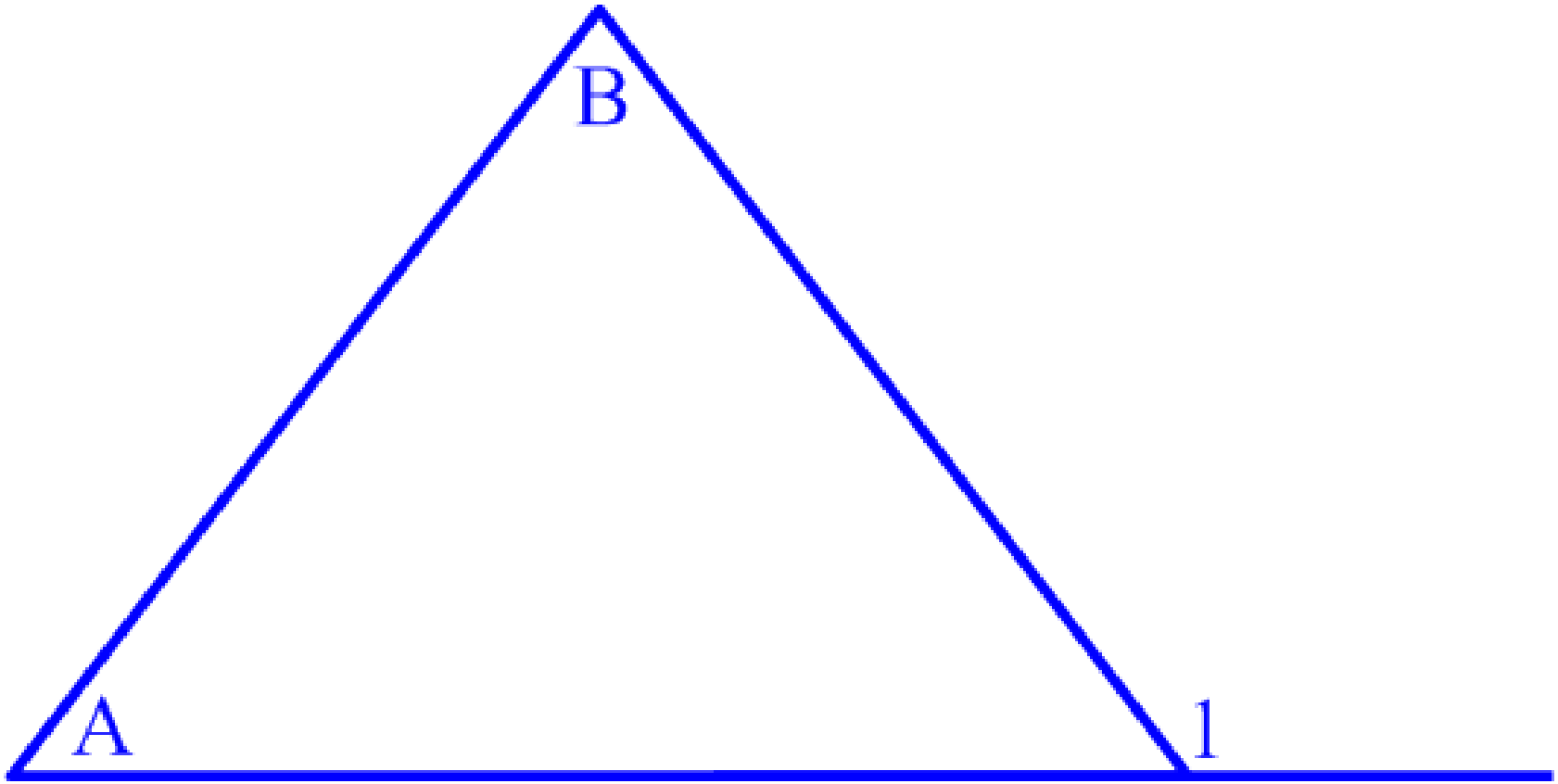
8. Triangle Sum Theorem:

The sum of the measures of the interior angles of a triangle equal 180 degrees.

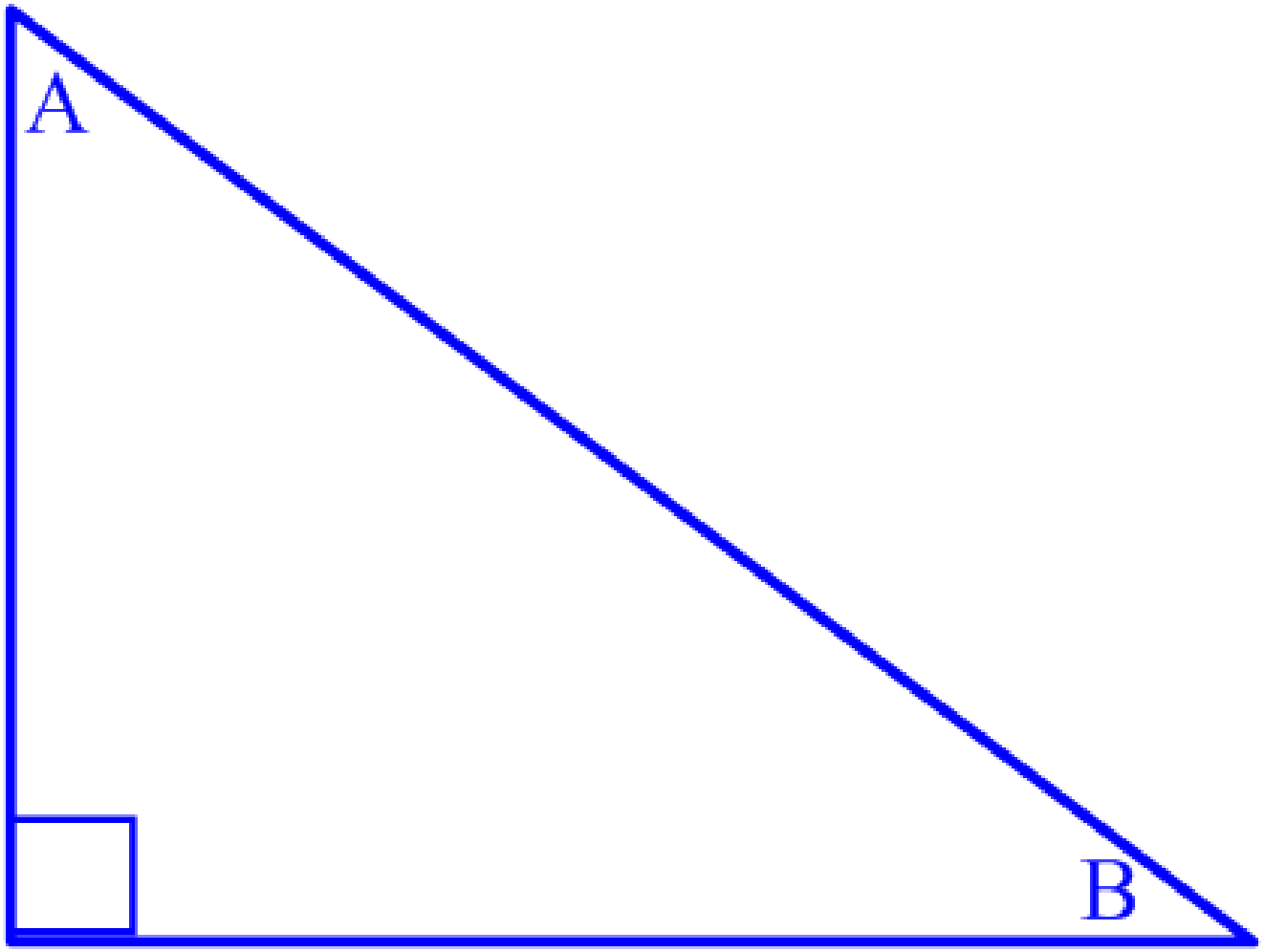
m<1 + m<2 + m<3 = 180 degrees



9. Exterior Angle Theorem:
The measure of an exterior angle of a triangle is equal to the sum of the measures of the two nonadjacent interior angles.
$m\angle 1 = m\angle A + m\angle B$



10. The acute angles of a right triangle are complementary.
$m\angle A + m\angle B = 90$ degrees



TRIANGLES:

Triangles can be classified by their sides and by their angles.

Sides:	Angles:
1. equilateral triangle: all sides equal	1. right triangle: one right angle two acute angles
2. isosceles triangle: two sides equal	2. obtuse triangle: one obtuse angle two acute angles
3. scalene triangle: no sides equal	3. acute triangle: 3 acute angles
	4. equiangular triangle: all 60 degree angles

1. A triangle with at least two sides of equal length is called a(n) _____ triangle.

2. If all angles of a triangle measure 60 degrees each, the triangle is called a(n) _____triangle.

3. In a right triangle, one angle measures 90 degrees and the other two angles measure a total of _____ degrees.

4. A scalene triangle has three sides of different length. If two angles measure 110 degrees, what is the measure of the third angle?_____

5. An angle is acute if it measures less than _____ degrees.

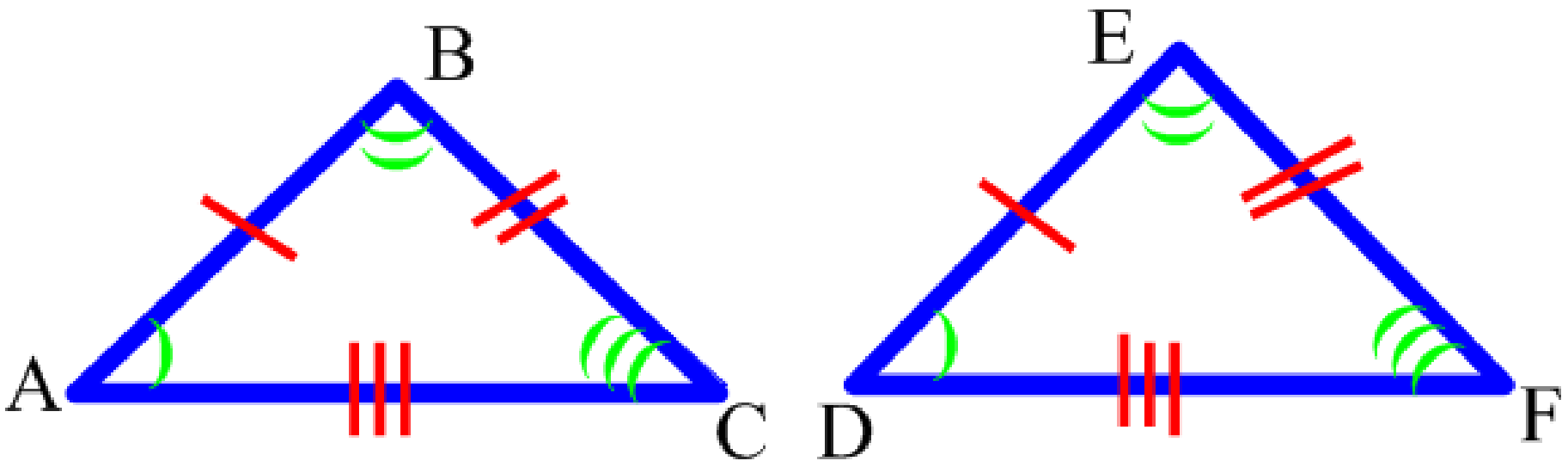
6. An angle is obtuse if it measures more than _____ degrees.

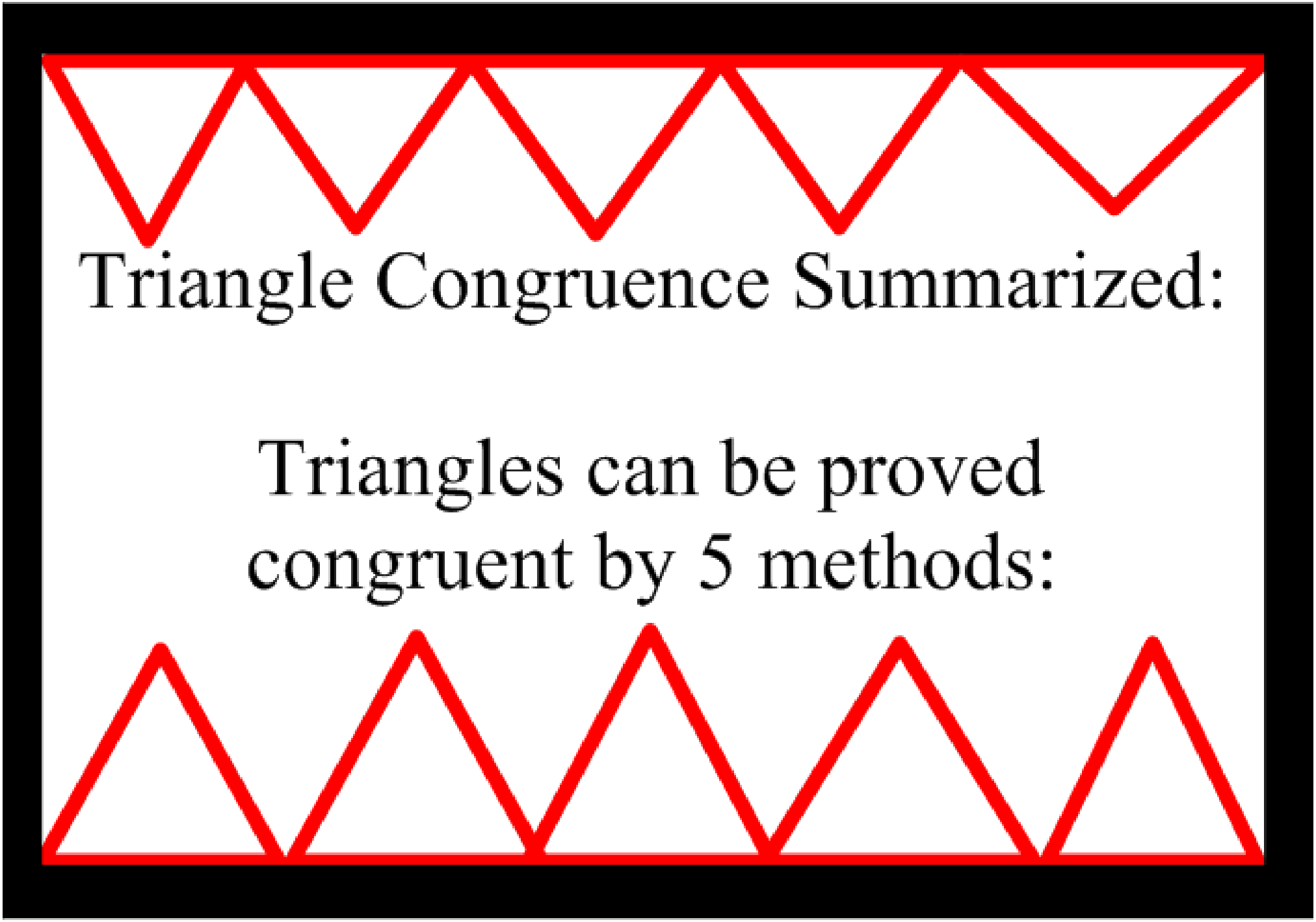
Congruent Triangles (Lesson 4.3)

1. Congruent:

Two geometric figures that have exactly the same size and shape. When two figures are congruent, all pairs of corresponding angles and corresponding sides are congruent.

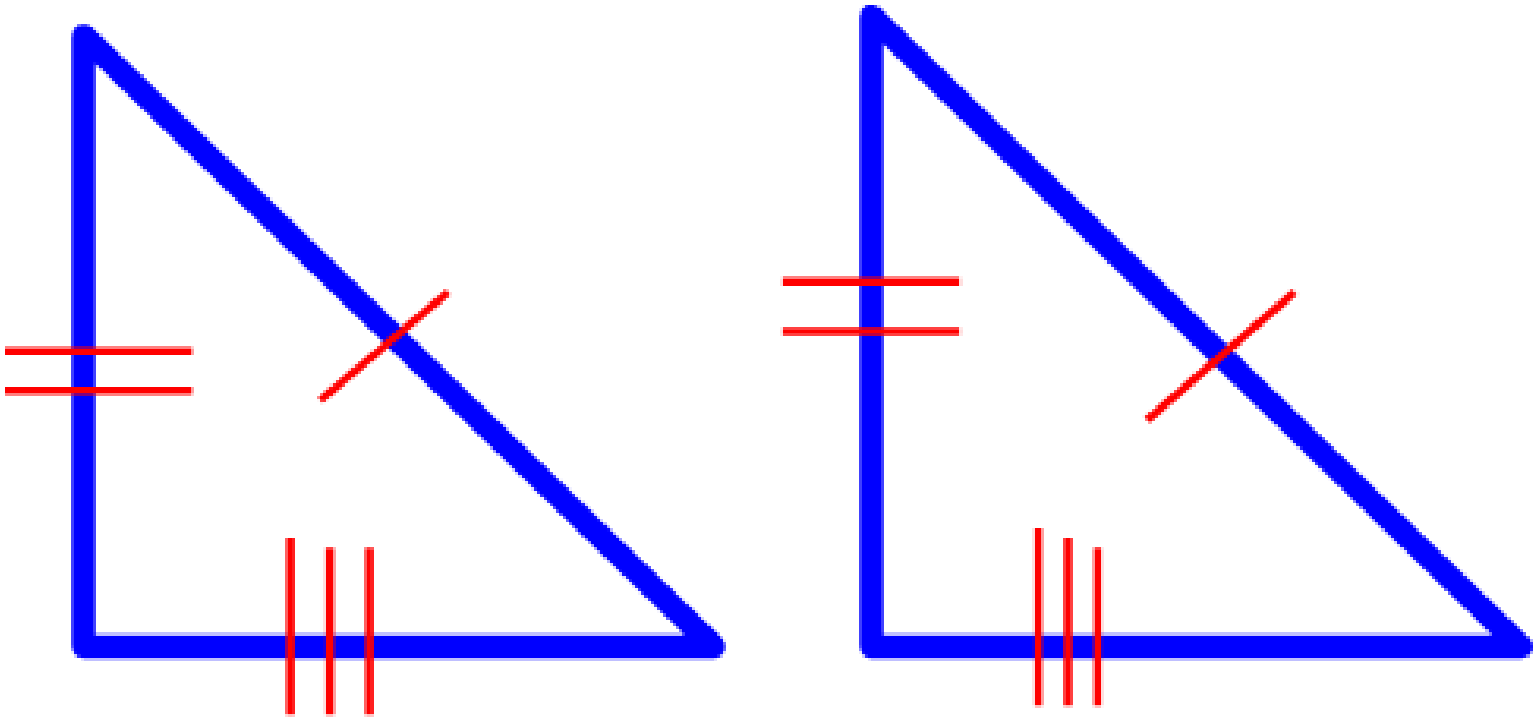
The symbol for "is congruent to" is $\cong$




Triangle Congruence Summarized:
Triangles can be proved
congruent by 5 methods:

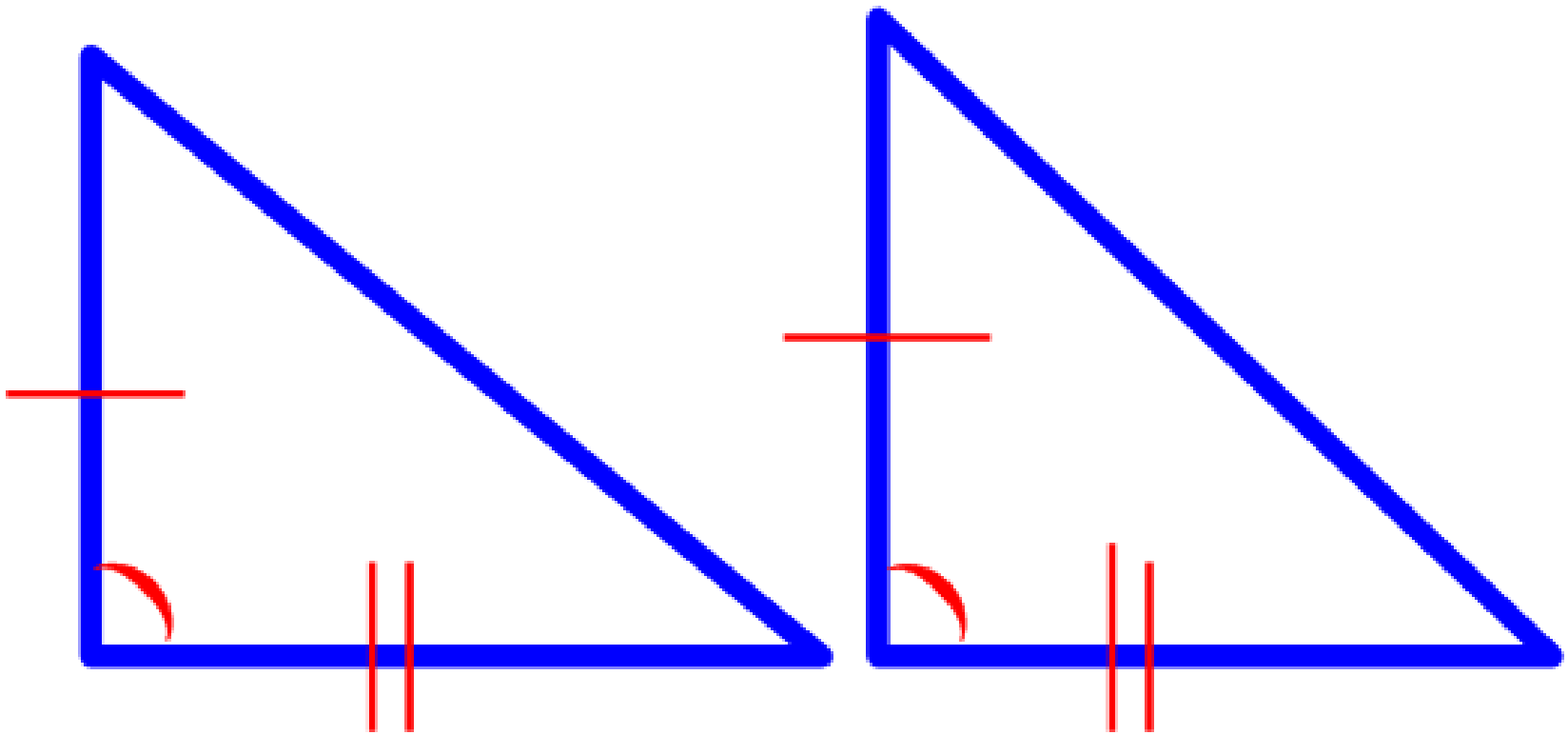
1. Side-Side-Side (SSS)

The three sides of one triangle are congruent to the three sides of the second triangle.



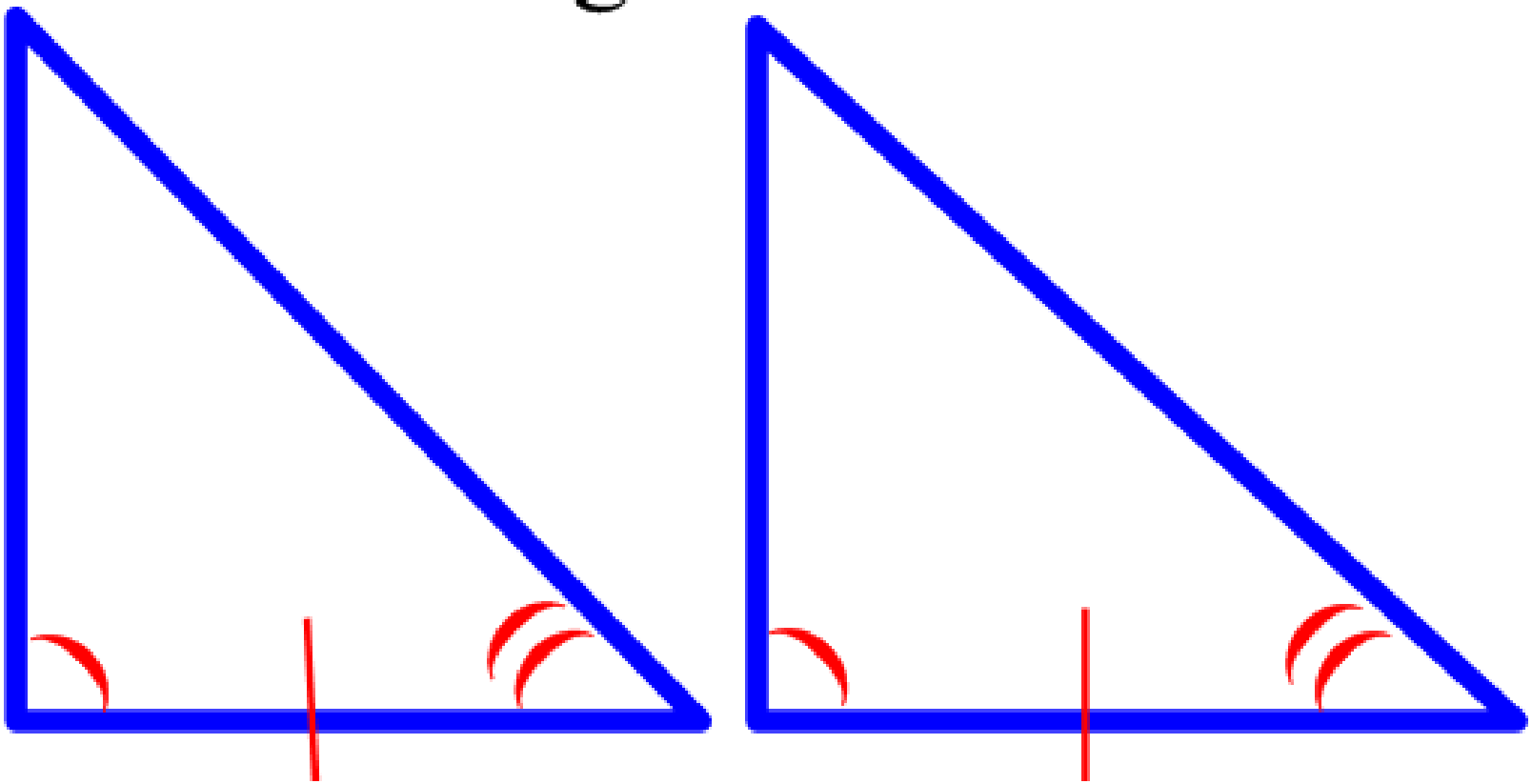
2. Side-Angle-Side (SAS):

Two sides and the included angle of one triangle are congruent to two sides and the included angle of the second triangle.

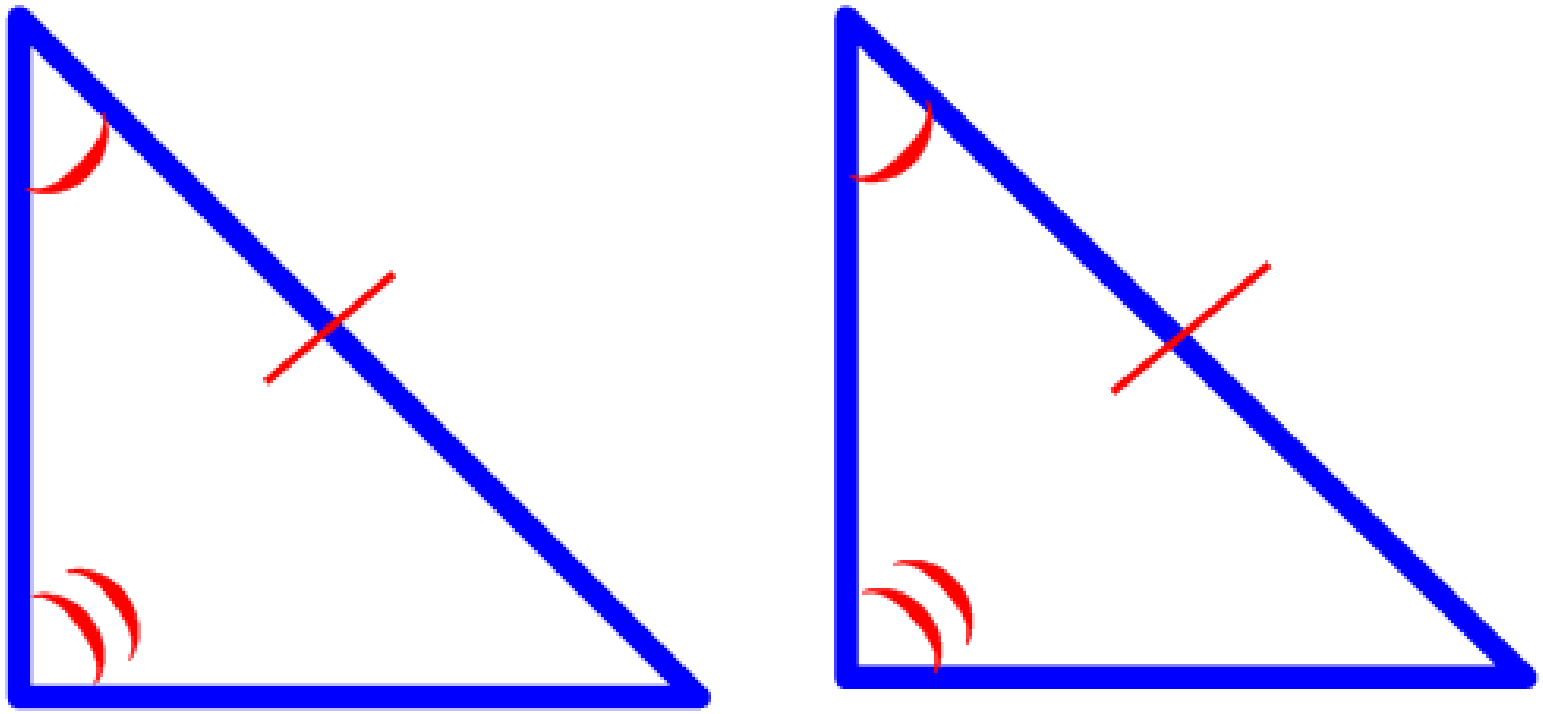


3. Angle-Side-Angle (ASA)

Two angles and the included side of one triangle are congruent to two angles and the included side of the second triangle.

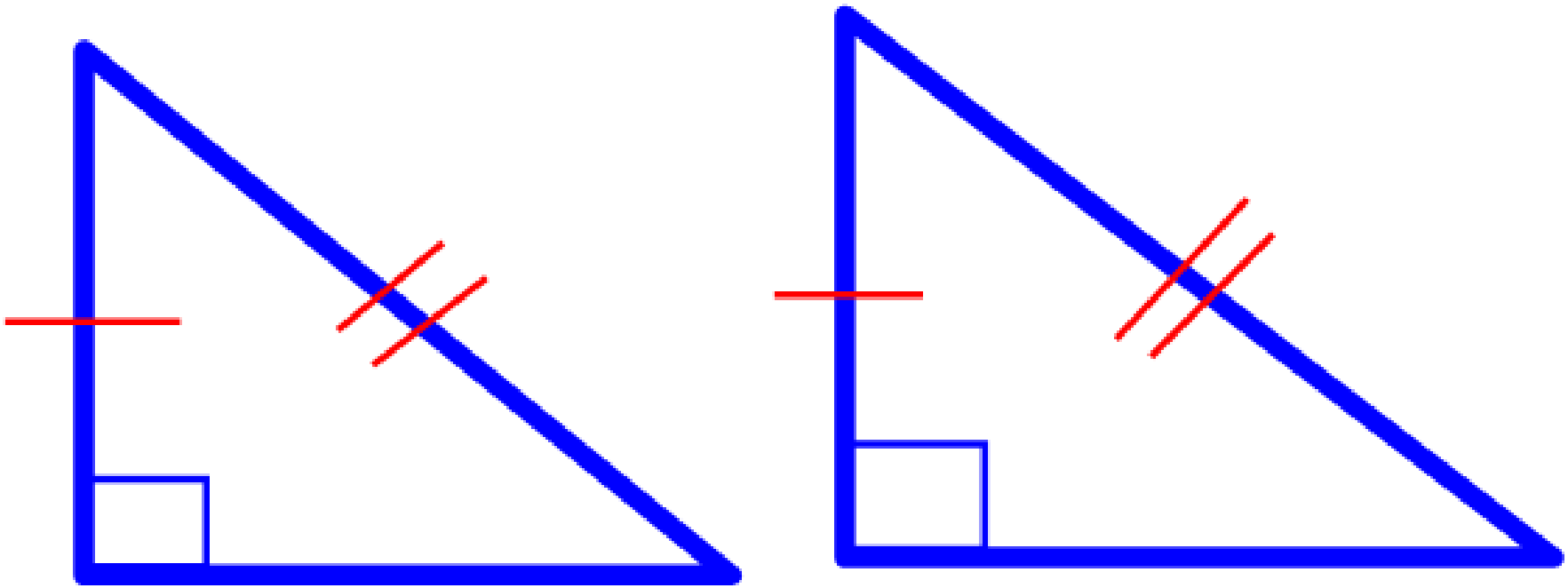


4. Angle-Angle-Side (AAS):
Two angles and a nonincluded side of one triangle are congruent to two angles and side of the second triangle.



5. Hypotenuse-Leg (HL)

The hypotenuse and one leg of a right triangle are congruent to the hypotenuse and same leg of the second triangle.



Triangles cannot be proved congruent by side-side-angle (SSA) or angle-angle-angle (AAA).