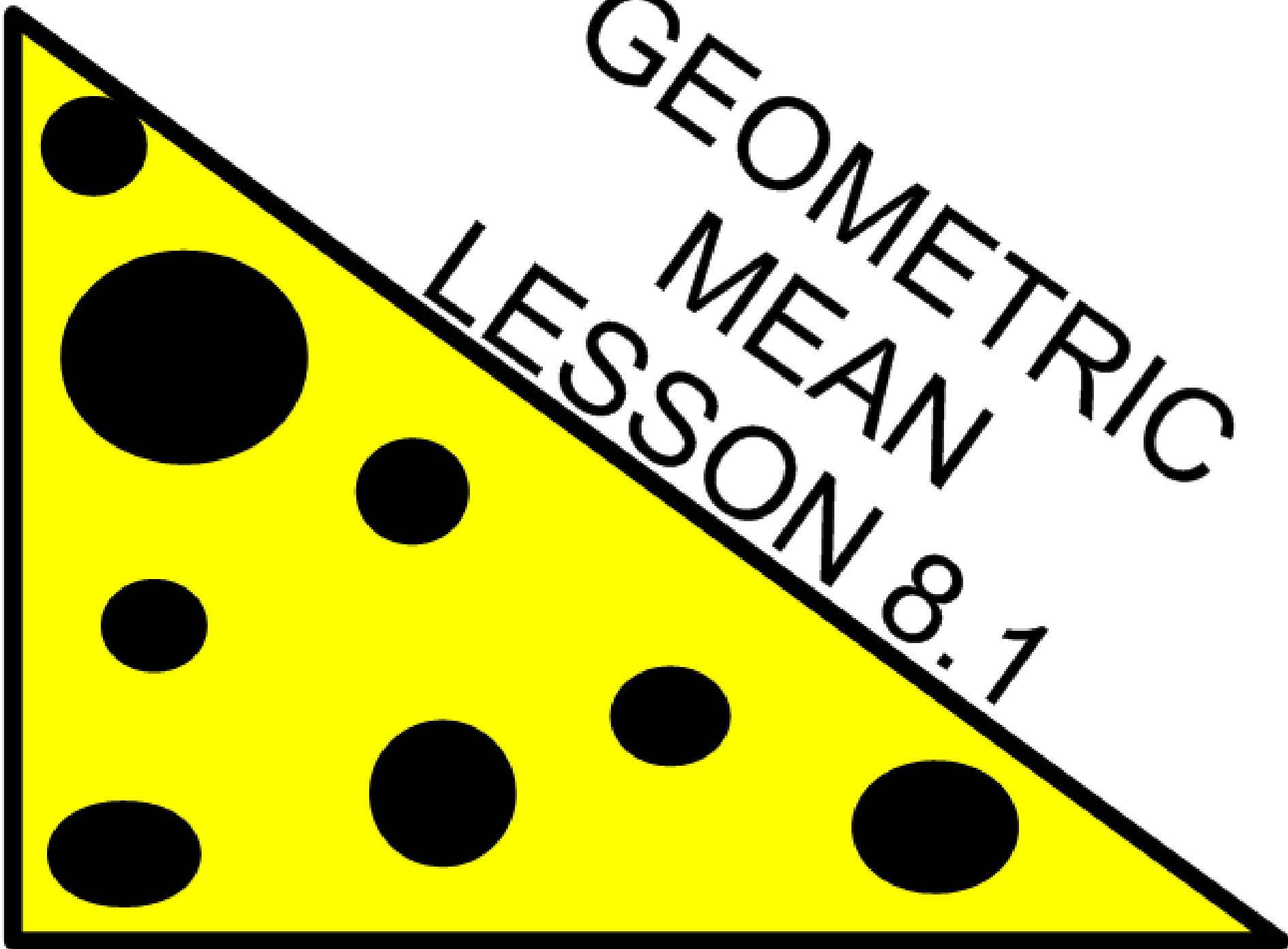
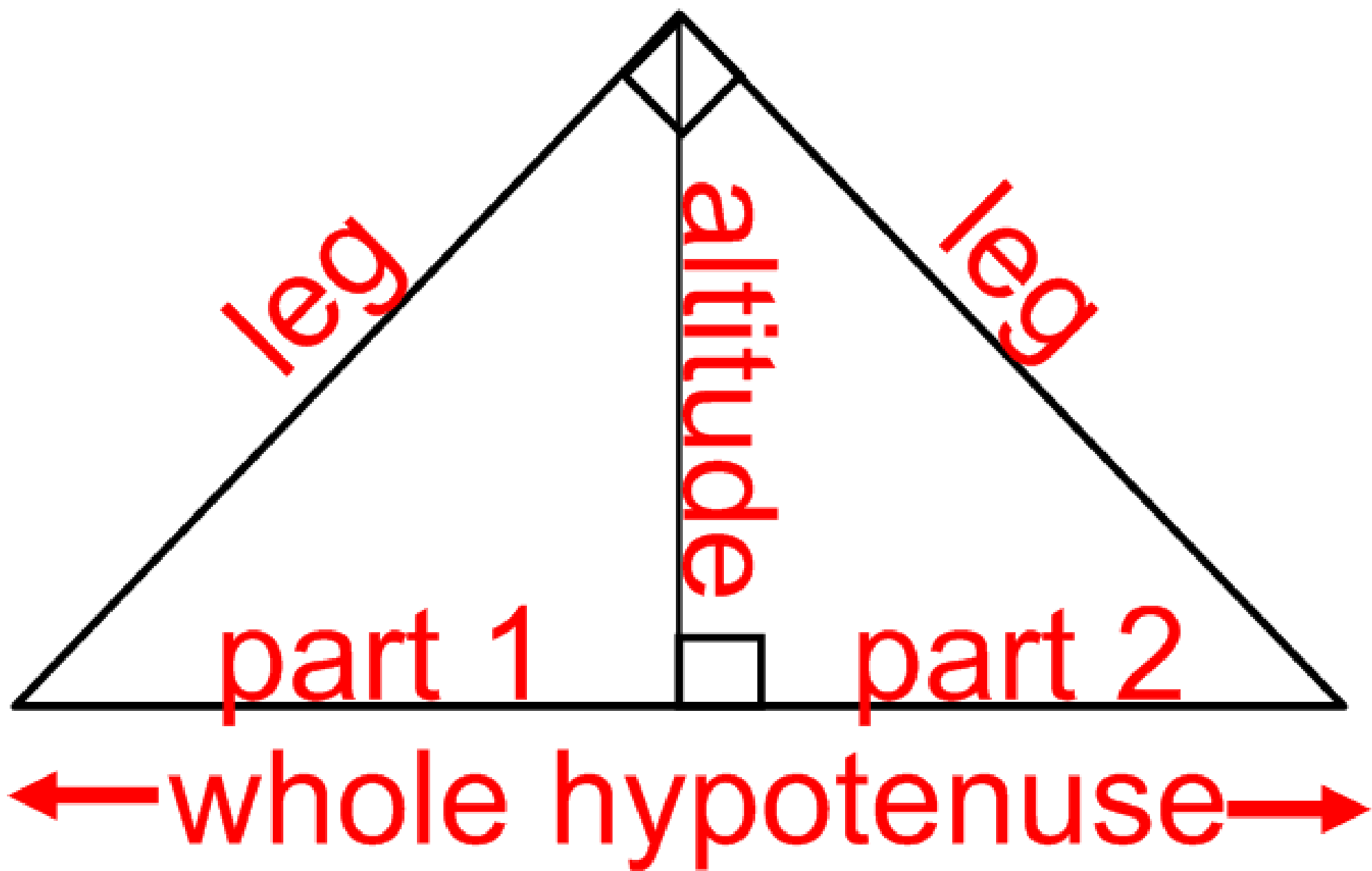




CHAPTER 8 NOTES

GEOMETRIC
MEAN
LESSON 8.1





$$\frac{\text{part 1}}{\text{altitude}} = \frac{\text{altitude}}{\text{part 2}}$$

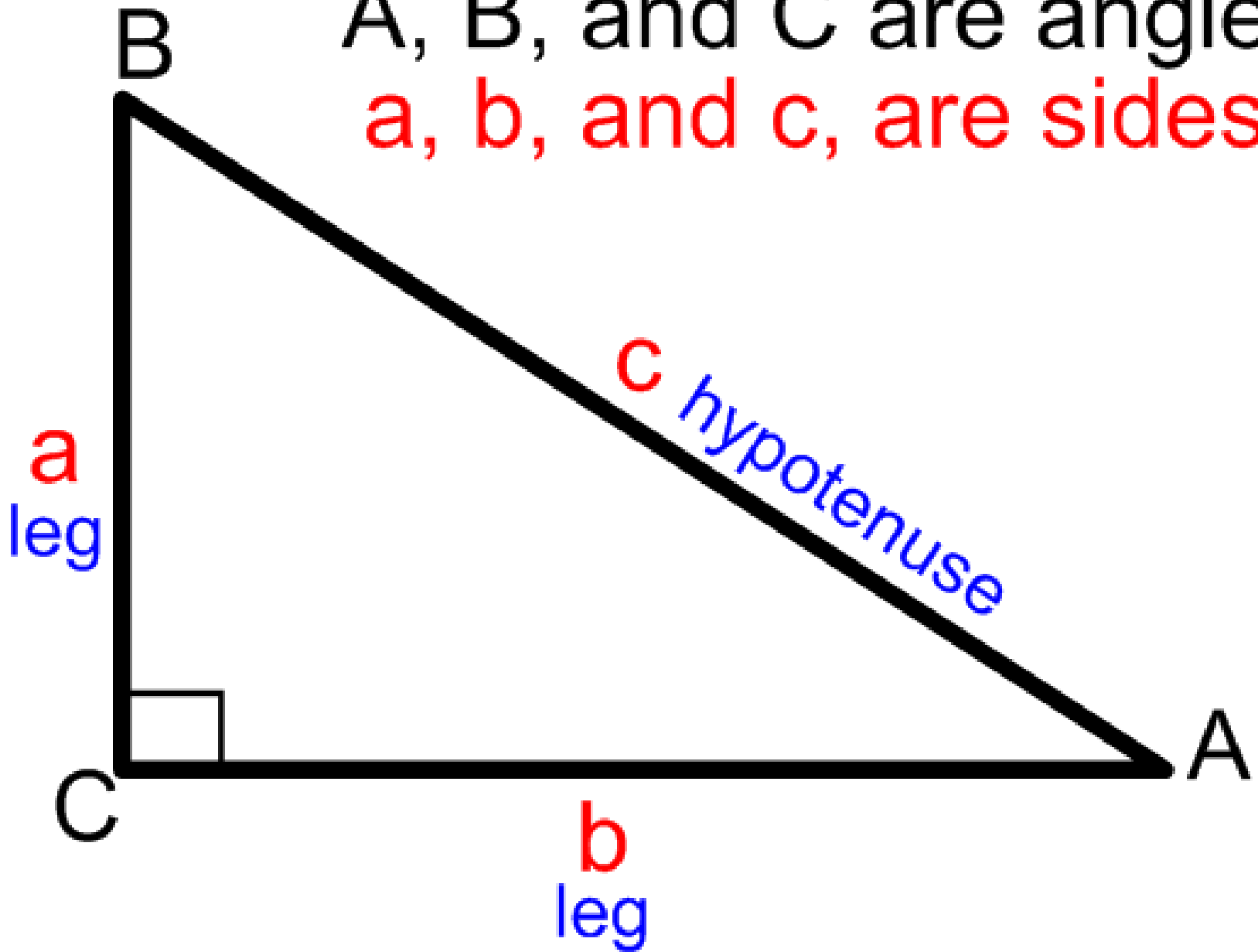
FORMULAS!!!

$$\frac{\text{part closest}}{\text{leg}} = \frac{\text{leg}}{\text{whole hypotenuse}}$$



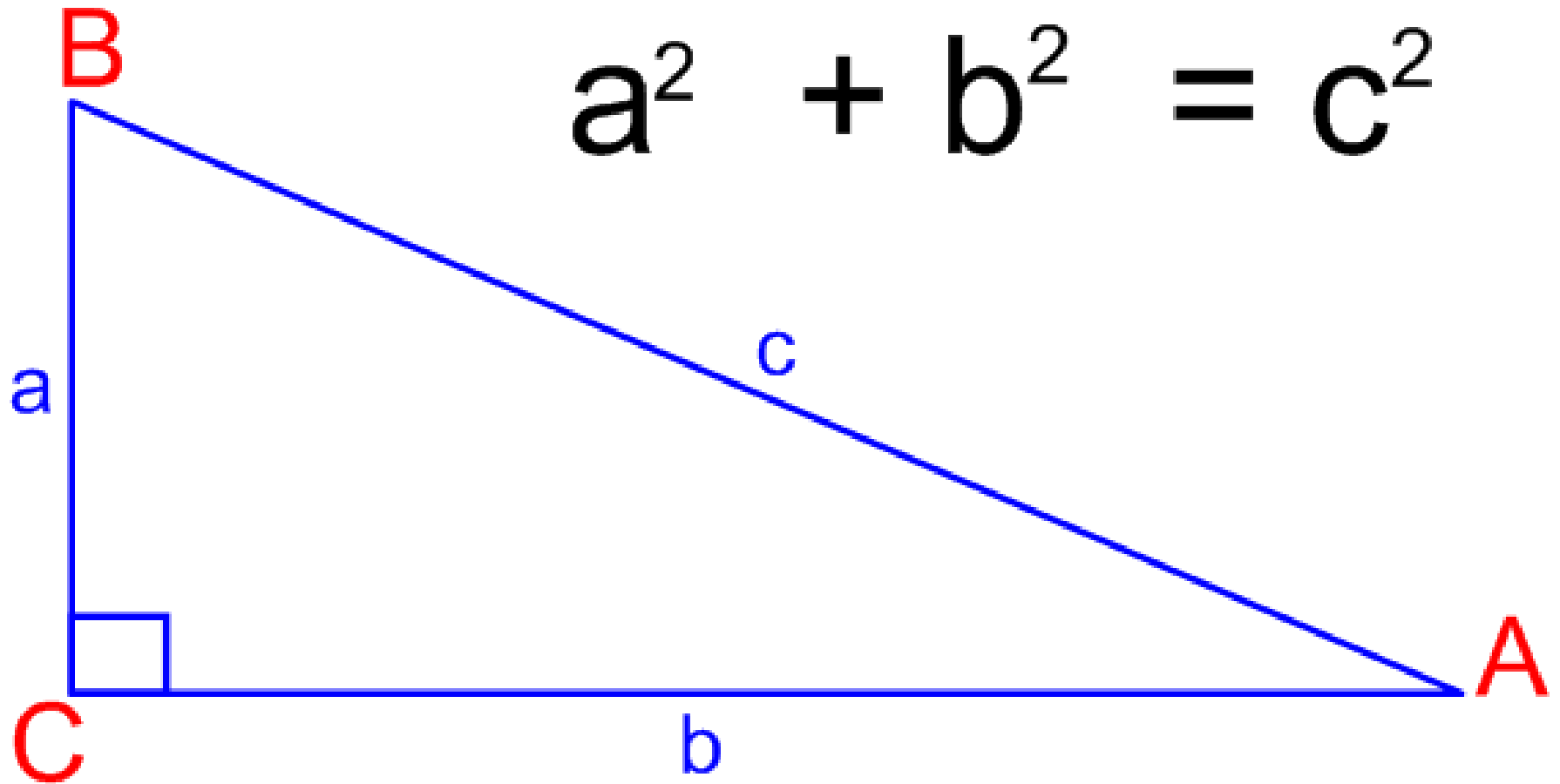
LESSON 8.2
PYTHAGOREAN
THEOREM
AND ITS
CONVERSE

A, B, and C are angles
a, b, and c, are sides



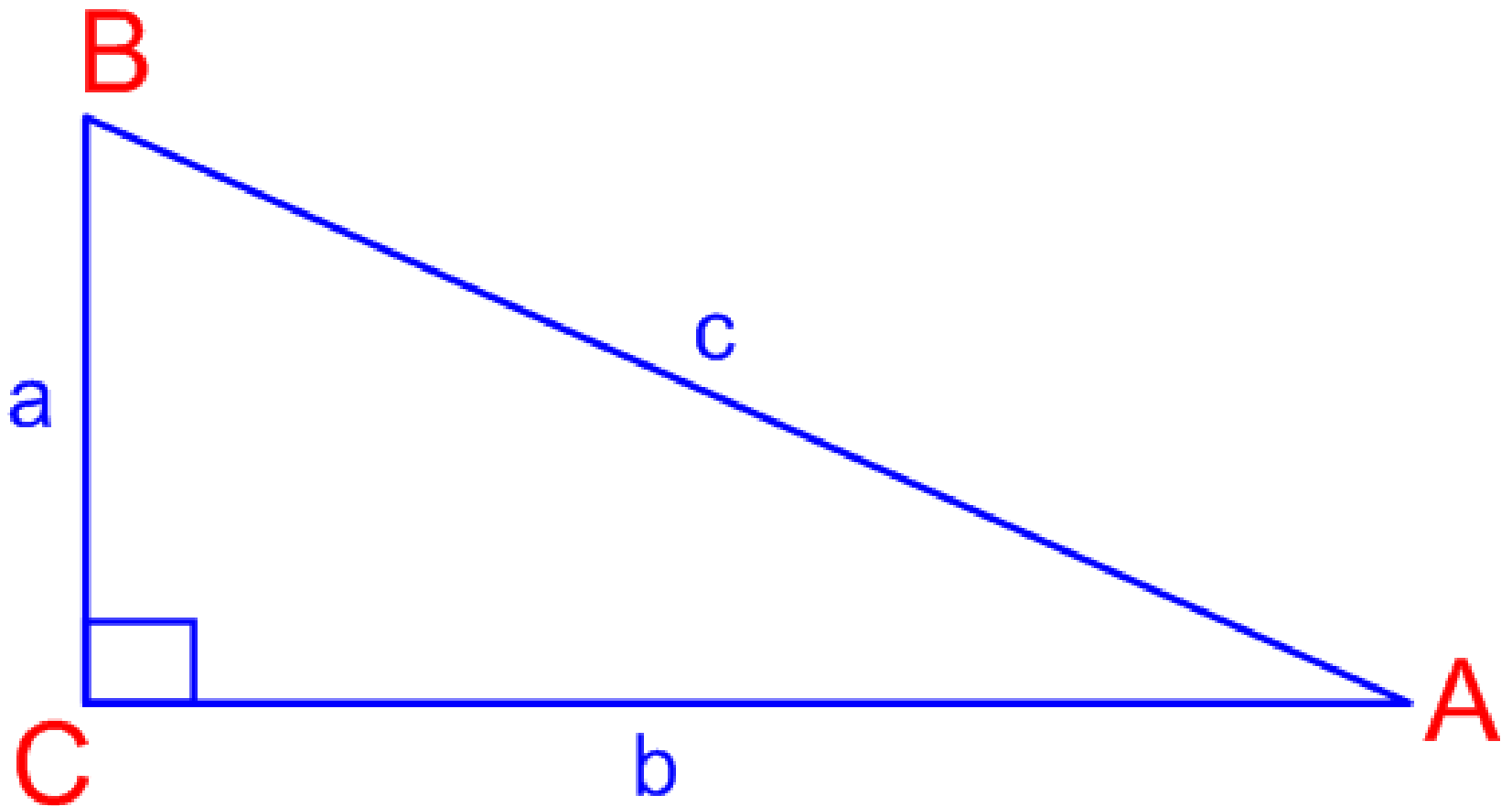
PYTHAGOREAN THEOREM:

In a right triangle, the sum of the squares of the measures of the legs equals the square of the measures of the hypotenuse.

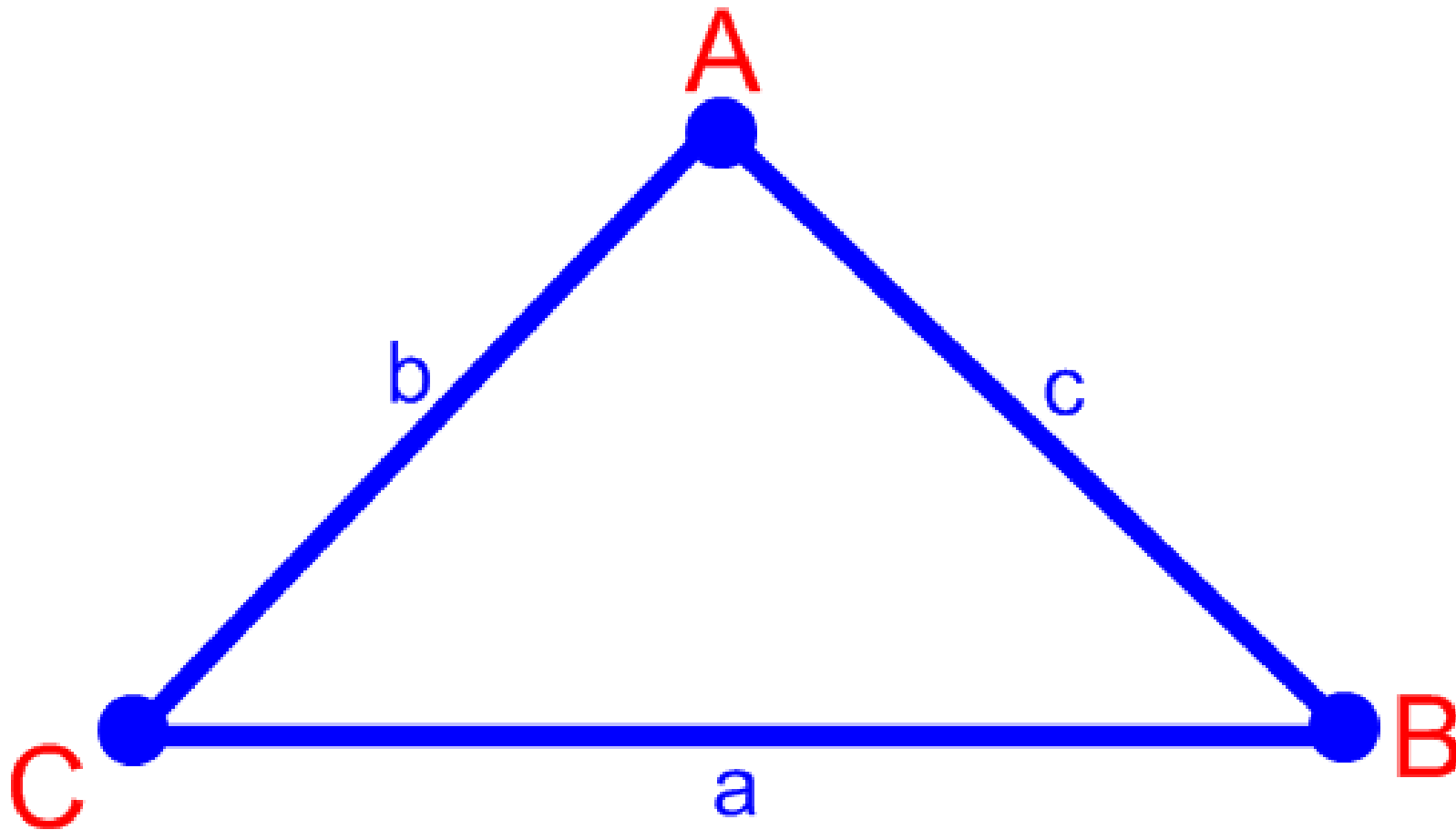


Converse of the Pythagorean Theorem:

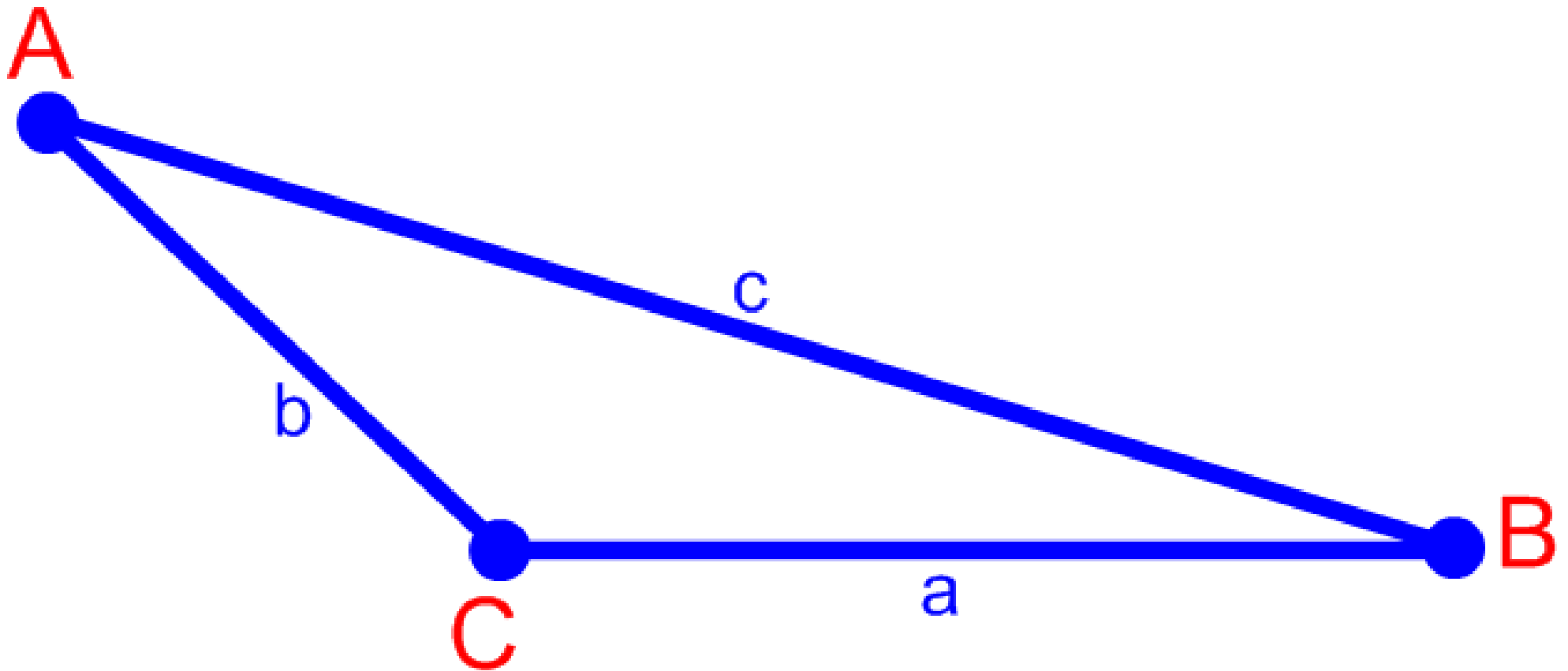
If $c^2 \equiv a^2 + b^2$, then $\triangle ABC$ is a right triangle.



If $c^2 < a^2 + b^2$, then $\triangle ABC$ is acute.



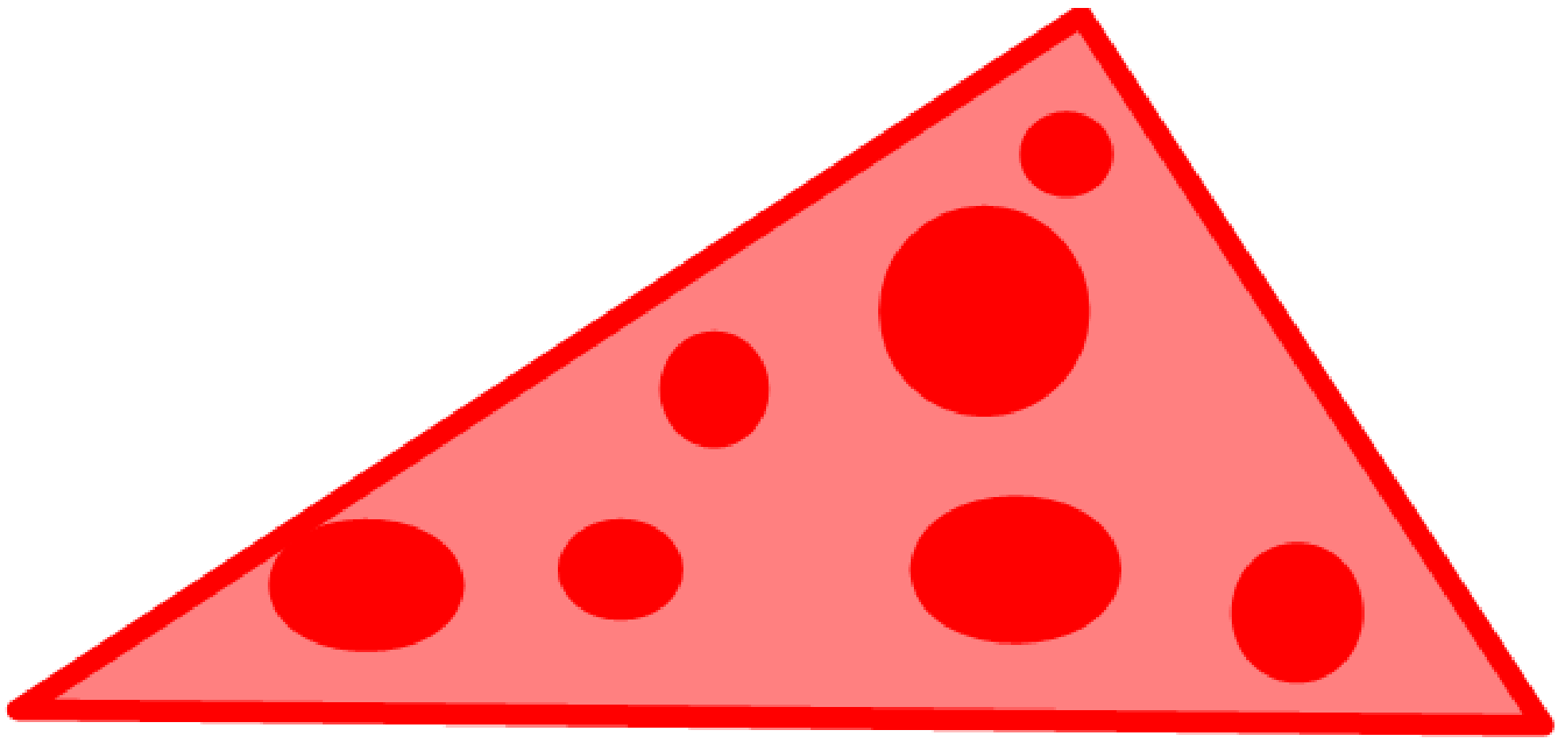
If $c^2 > a^2 + b^2$, then $\triangle ABC$ is obtuse.



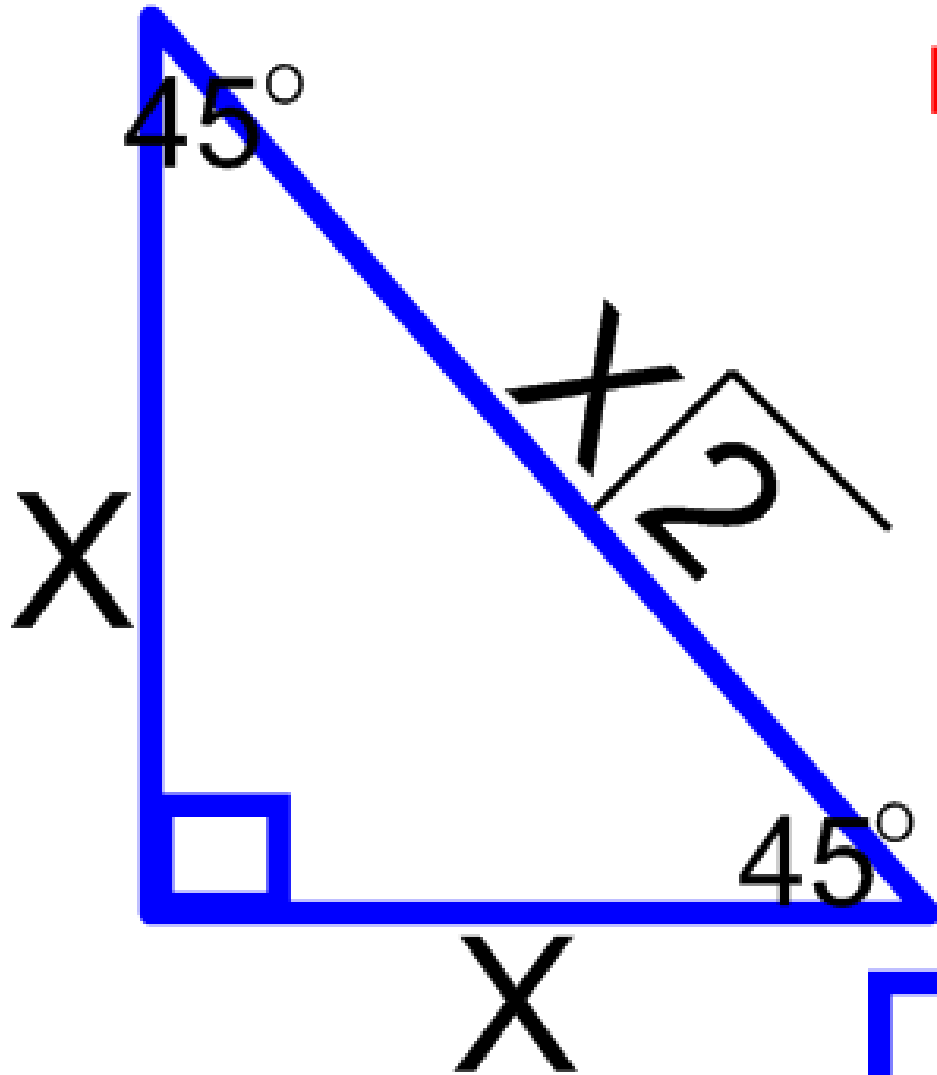
PYTHAGOREAN TRIPLES:

A set of three positive integers a , b , and c that satisfy the equation $c^2 = a^2 + b^2$

In order to be a triangle, the sum of the lengths of any two sides of a triangle must be greater than the length of the third side.
(small + small > large)



LESSON 8.3
SPECIAL RIGHT
TRIANGLES

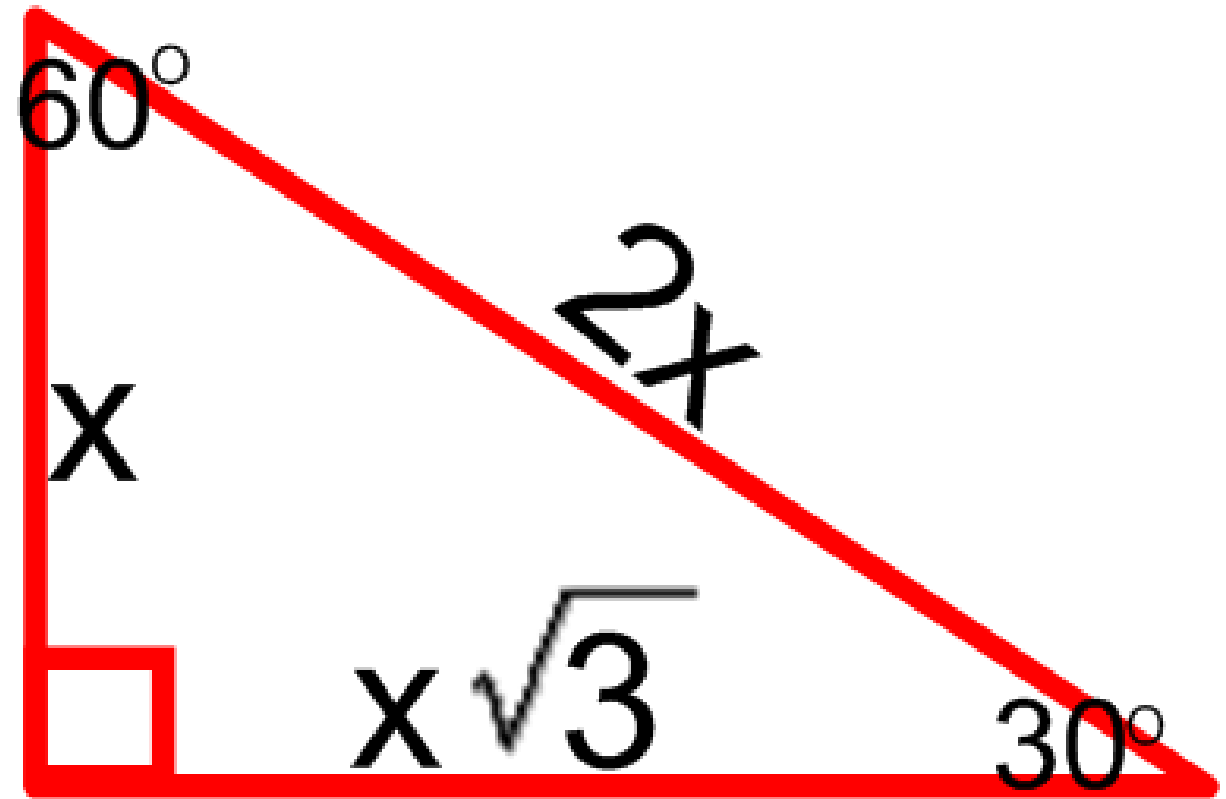


$$\text{hypotenuse} = \text{leg} * \sqrt{2}$$

$$\text{leg} = \frac{\text{hypotenuse} * \sqrt{2}}{2}$$

45 - 45 - 90
triangle

30 - 60 - 90
triangle

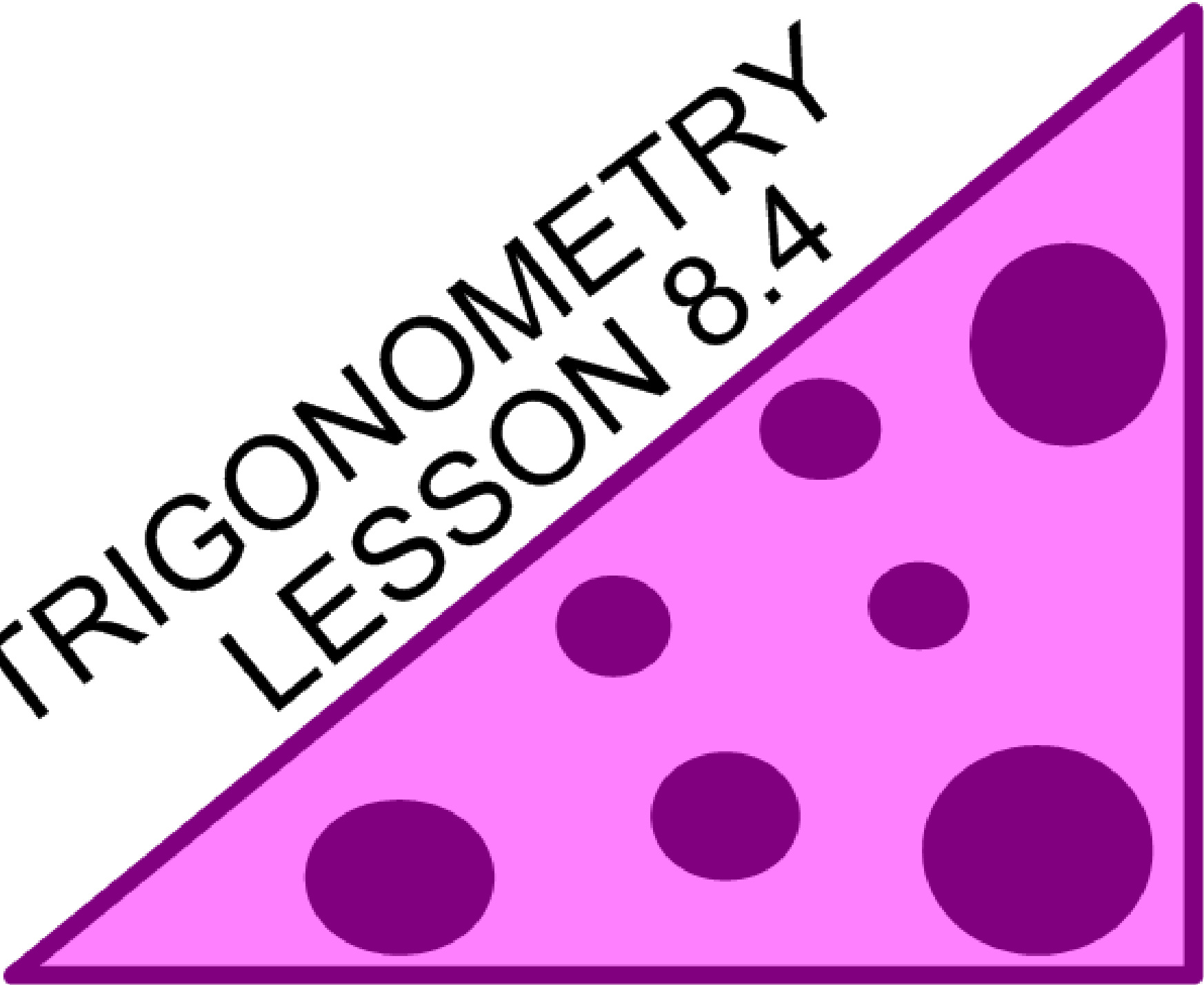


$$LL = SL * \sqrt{3}$$

$$\text{hypotenuse} = 2 * SL$$

$$SL = \frac{\text{hypotenuse}}{2} \quad \text{OR} \quad \frac{LL * \sqrt{3}}{3}$$

TRIGONOMETRY LESSON 8.4

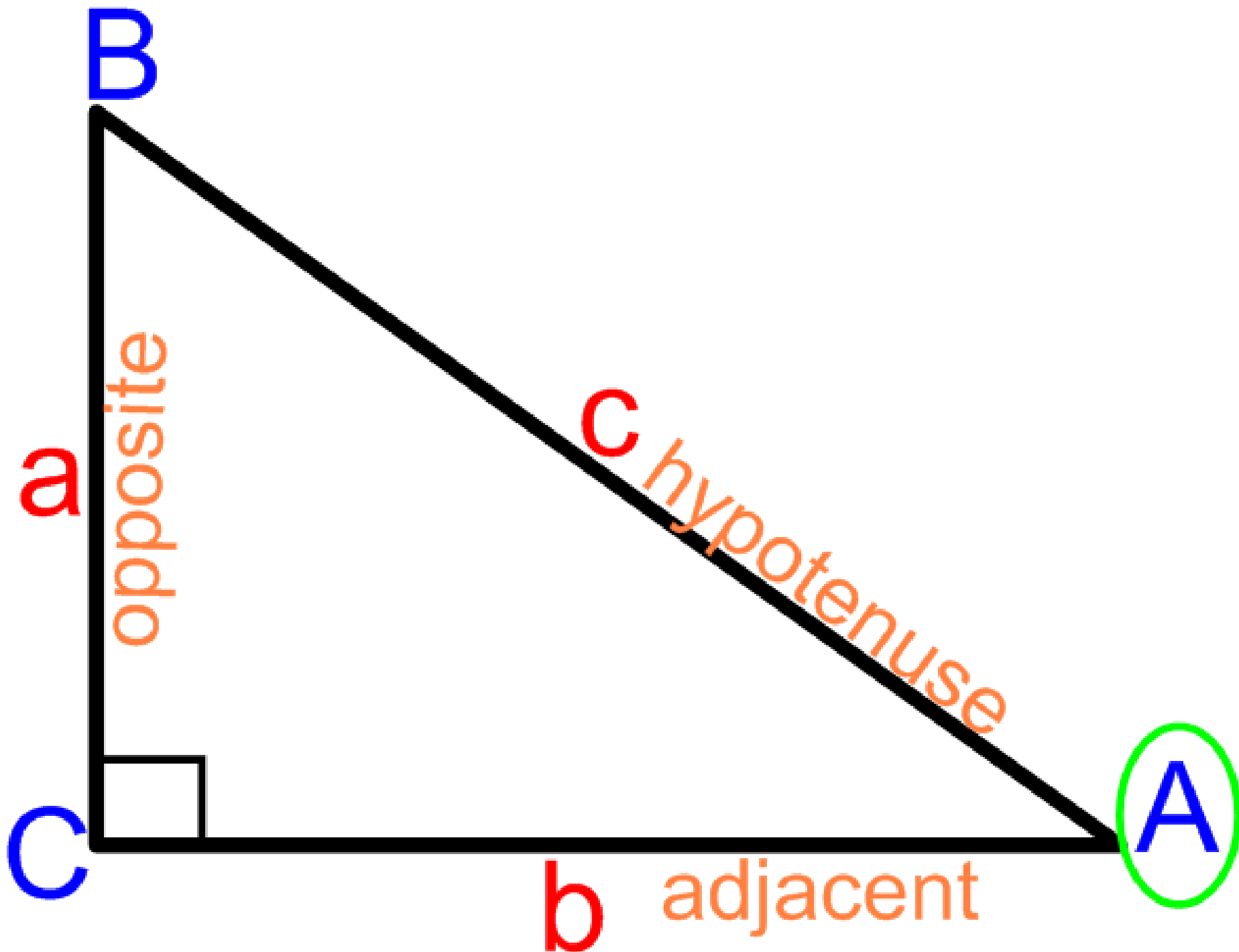


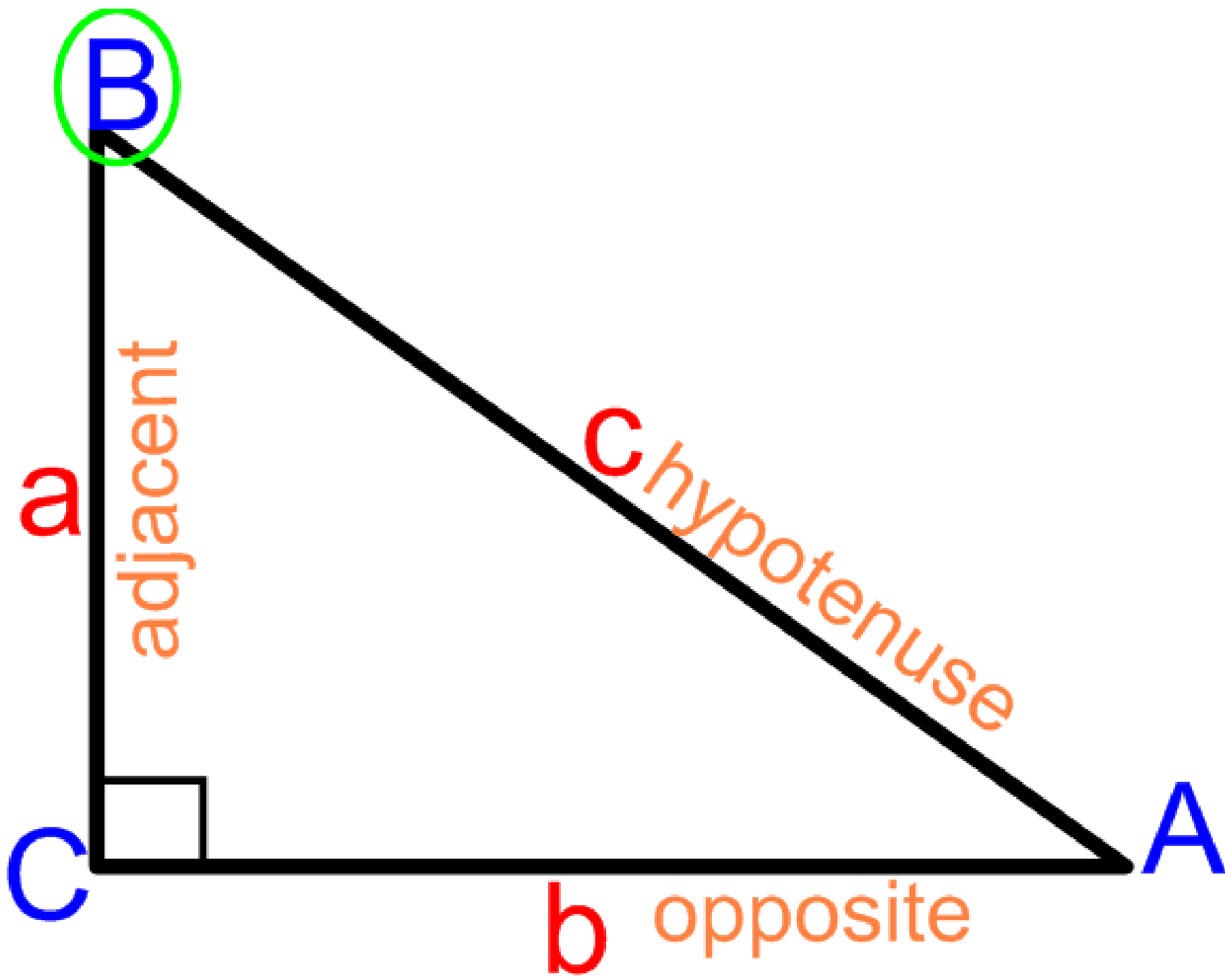
TRIGONOMETRY:

The study of triangle measurement.

TRIGONOMETRIC RATIOS:

A ratio of the lengths of two sides of a right triangle. The three basic trigonometric ratios are sine (sin), cosine (cos), and tangent (tan).





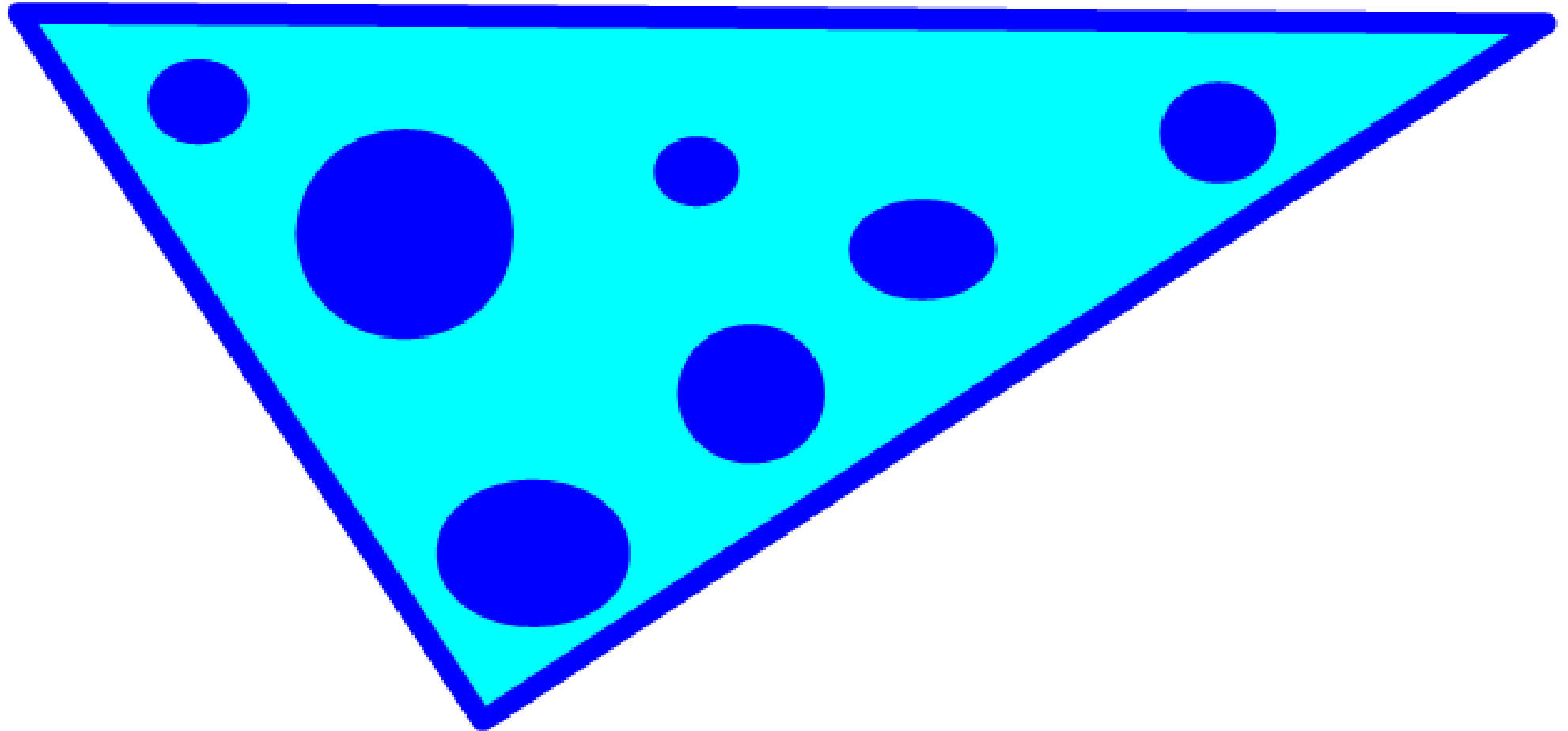
TRIGONOMETRIC RATIOS

$$\sin = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos = \frac{\text{adjacent}}{\text{hypotenuse}}$$

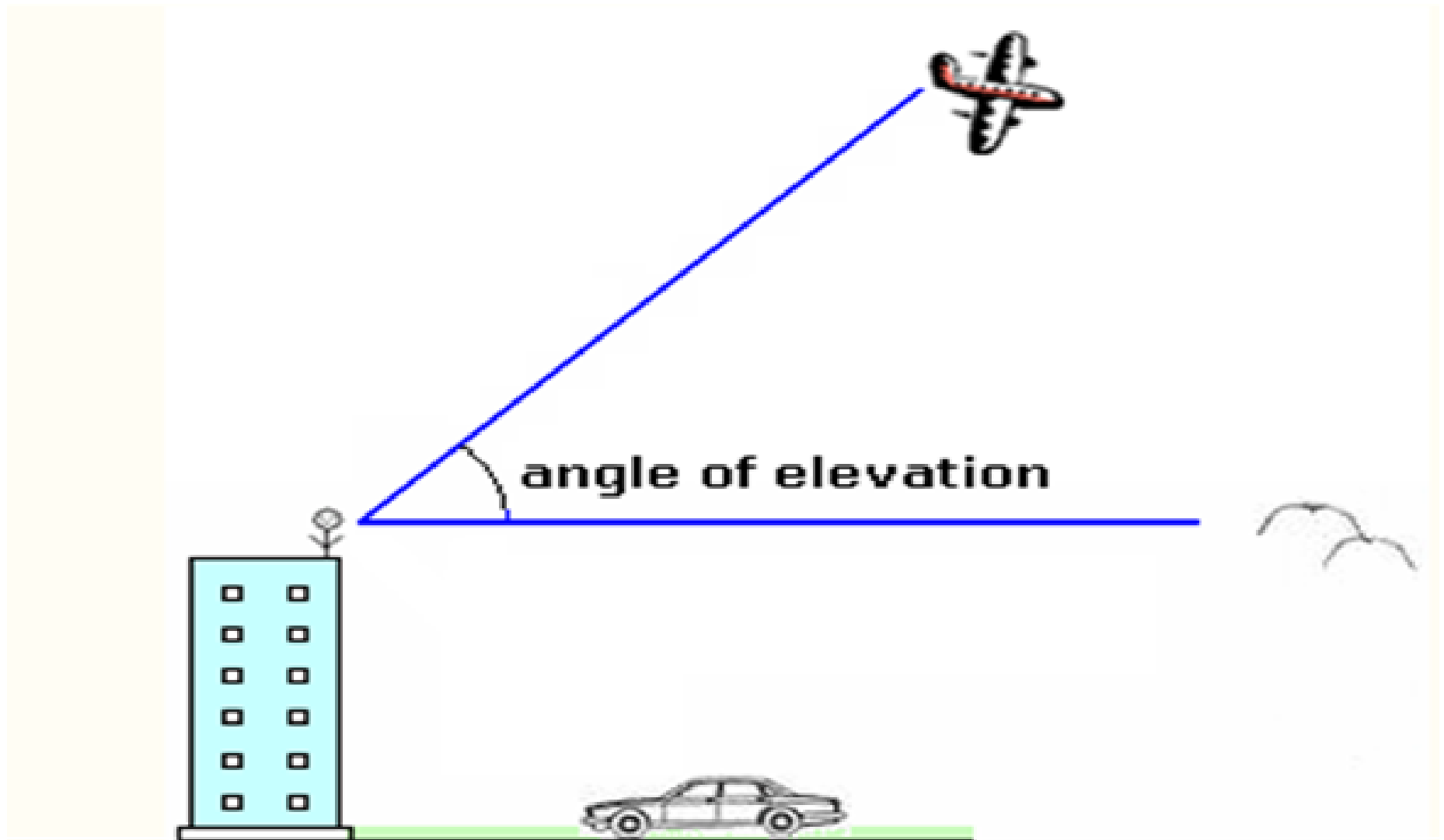
$$\tan = \frac{\text{opposite}}{\text{adjacent}}$$

ANGLES OF ELEVATION
AND
ANGLES OF DEPRESSION
LESSON 8.5



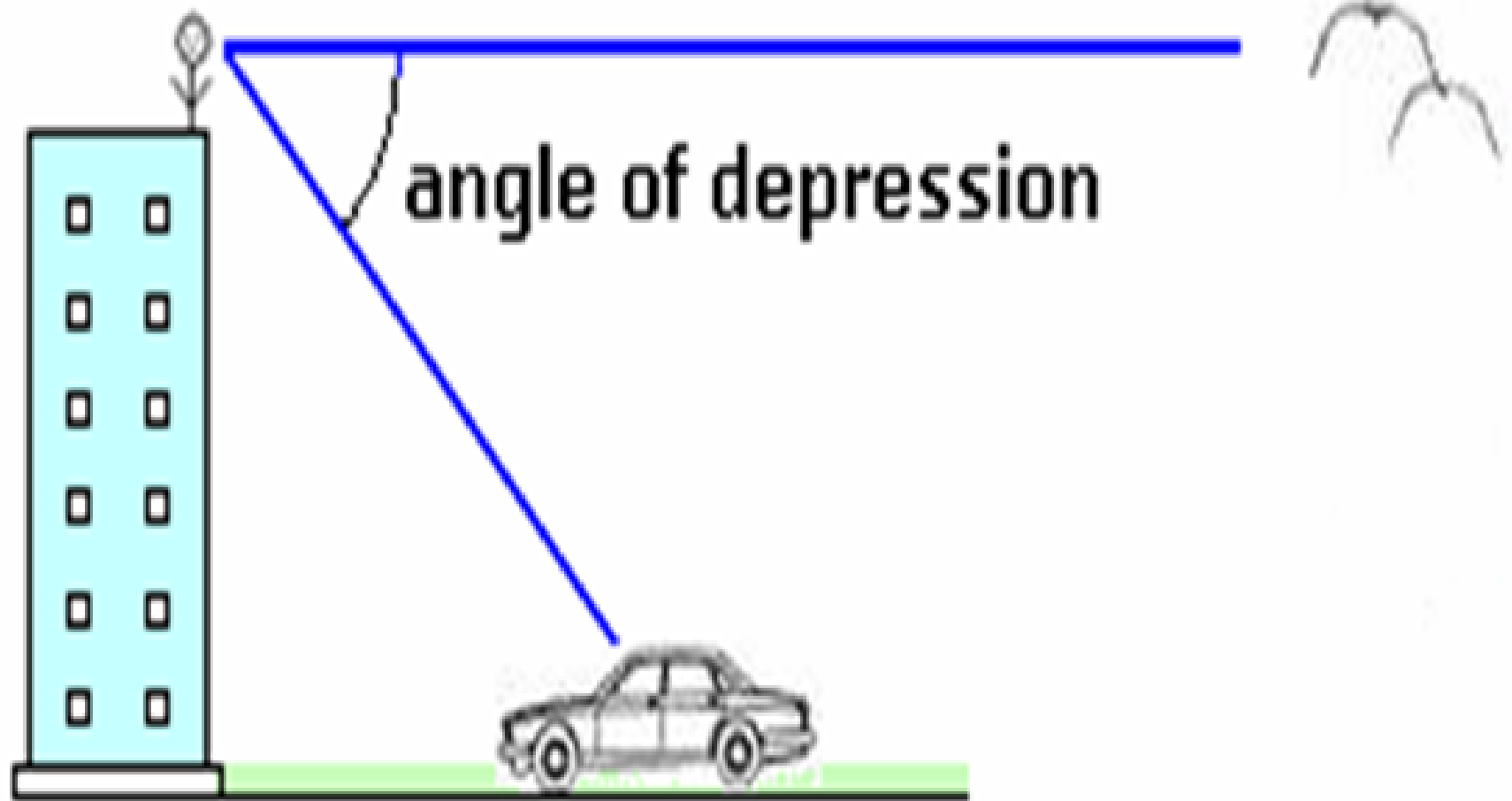
ANGLE OF ELEVATION:

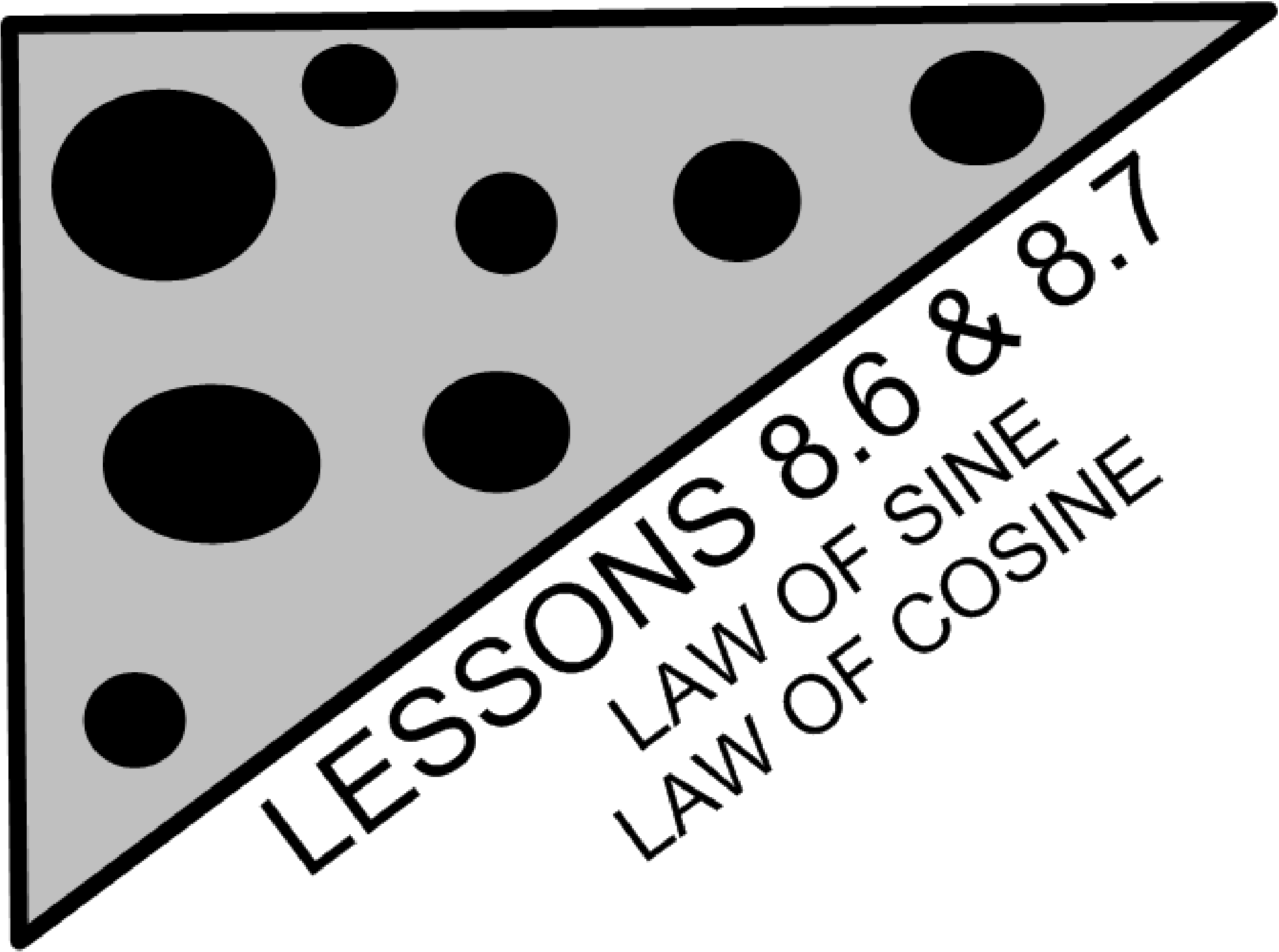
The angle between the line of sight and the horizontal when an observer looks upward.



ANGLE OF DEPRESSION:

The angle between the line of sight when an observer looks downward and the horizontal.

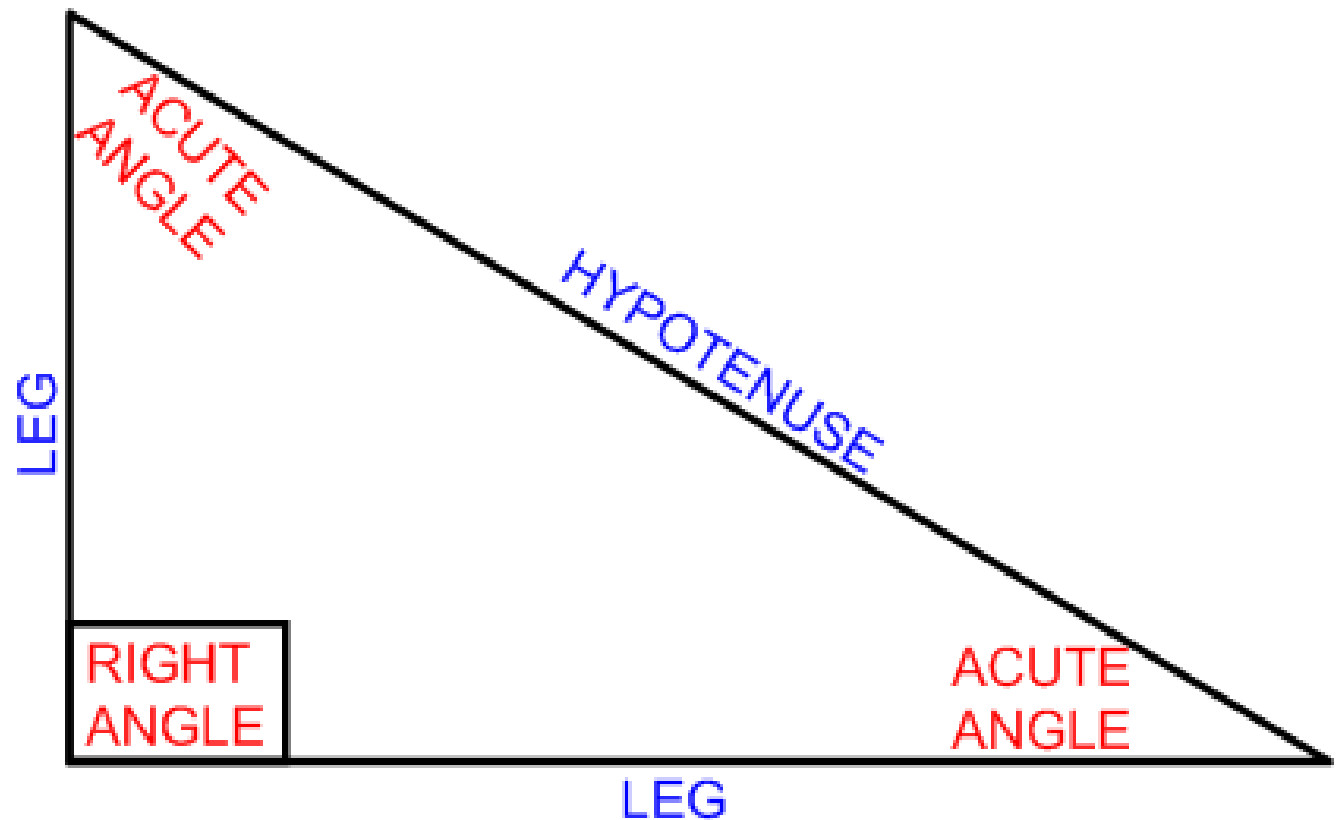




LESSONS 8.6 & 8.7
LAW OF SINE
LAW OF COSINE

SOLVING RIGHT TRIANGLES

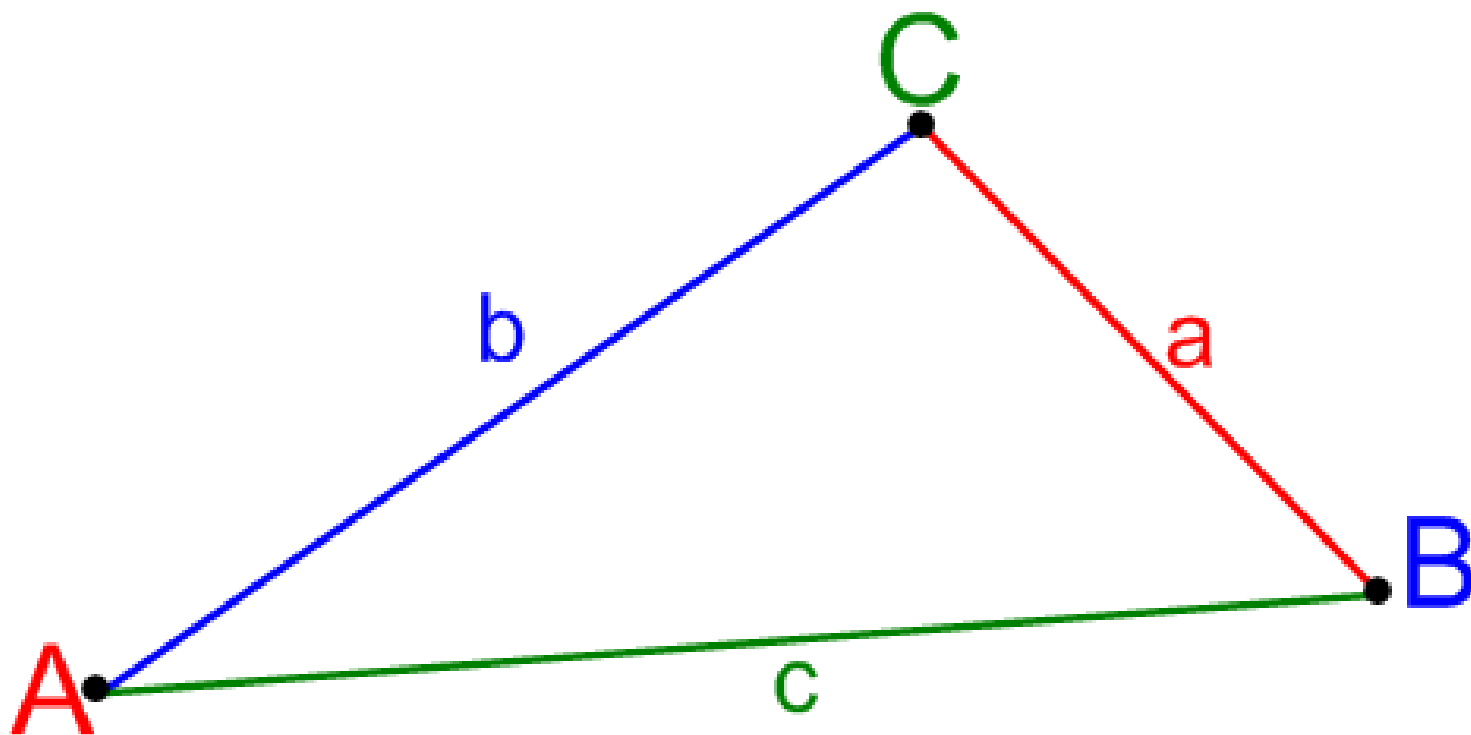
Every right triangle has one right angle, two acute angles, one hypotenuse, and two legs. To solve a right triangle means to determine the measure of all six parts.



To Solve	Given	Begin by using
Right Triangle	two legs	tangent
	leg and hypotenuse	sine and cosine
	angle and hypotenuse	sine or cosine
	angle and a leg	sine, cosine, or tangent
Any Triangle	two angles and any side	Law of Sines
	two sides and the angle opposite one of them	Law of Sines
	two sides and the included angle	Law of Cosines
	three sides	Law of Cosines

Law of Sines

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin c}{c}$$



Law of Cosines

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

