

Lesson Plan 9 Solving Triangles Math 48C Mitchell Schoenbrun

- 1) Attendance
- 2) Quiz
- 3) Homework

Play DVD Triangle Trigonometry

What do I mean by SOLVING TRIANGLES?

Geometry gives us four Triangle Congruence Theorems.

Actually one of them is usually a postulate.

SSS

SAS

ASA

AAS

HL

Note that AAS is equivalent to ASA because if two angles of a triangle are the same, the third must be the same.

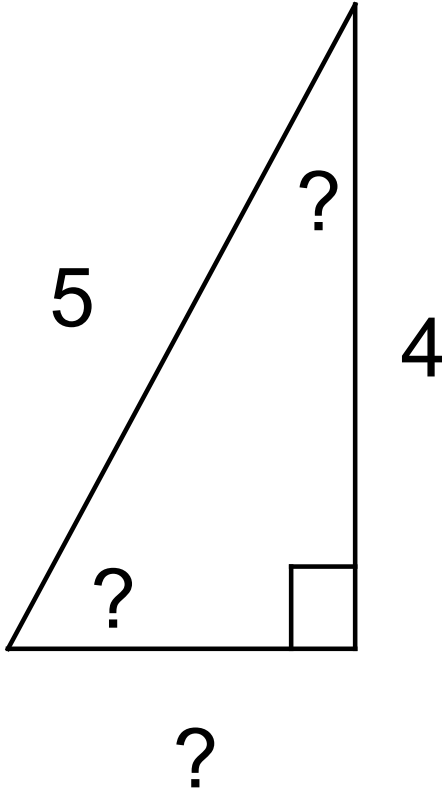
These theorems give us a basis for determining if two triangles are congruent (Same length sides, same angles) based on their having three features in common.

But this also means that if you know these three features of a triangle, that triangle is completely determined.

What SOLVING A TRIANGLE means is once we have any three features, determine the others.

HL

From Geometry we already have some tools that help us do this. We know this triangle is determined by HL Hypotenuse Leg



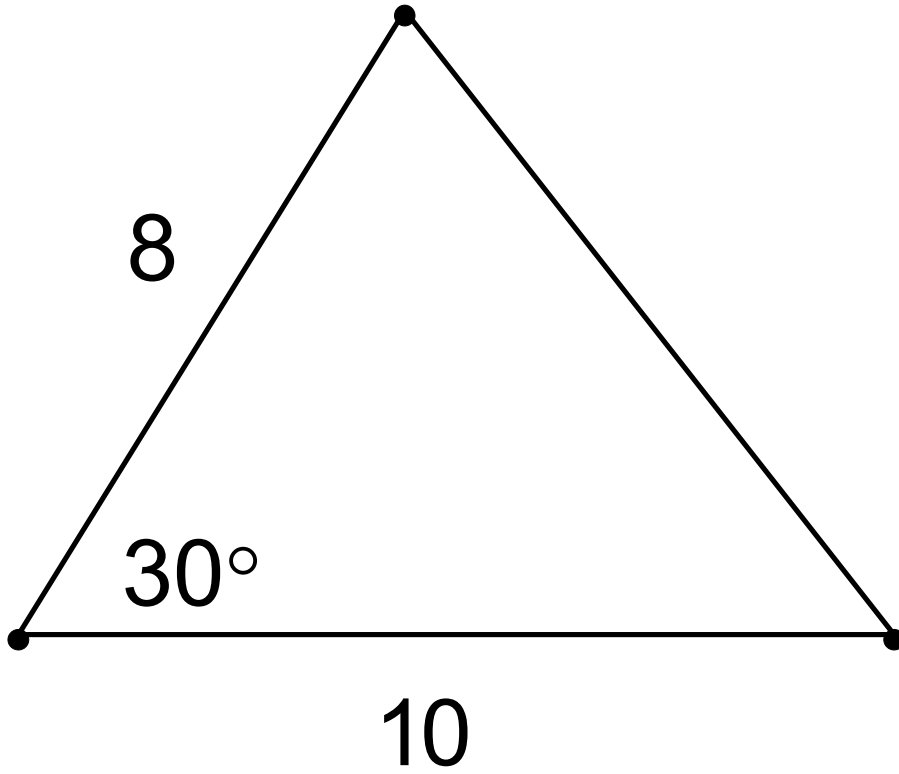
Using the Pythagorean Theorem, we can find the missing leg.
Then using our inverse trig functions, we can find one of the missing angles.

$$\cos^{-1}\left(\frac{4}{5}\right) = ?$$

Finally we can find the last angle in multiple ways.
(Inverse Trig Functions)
(Sum of the Angles)
(Non right angles in a right triangle are complementary)

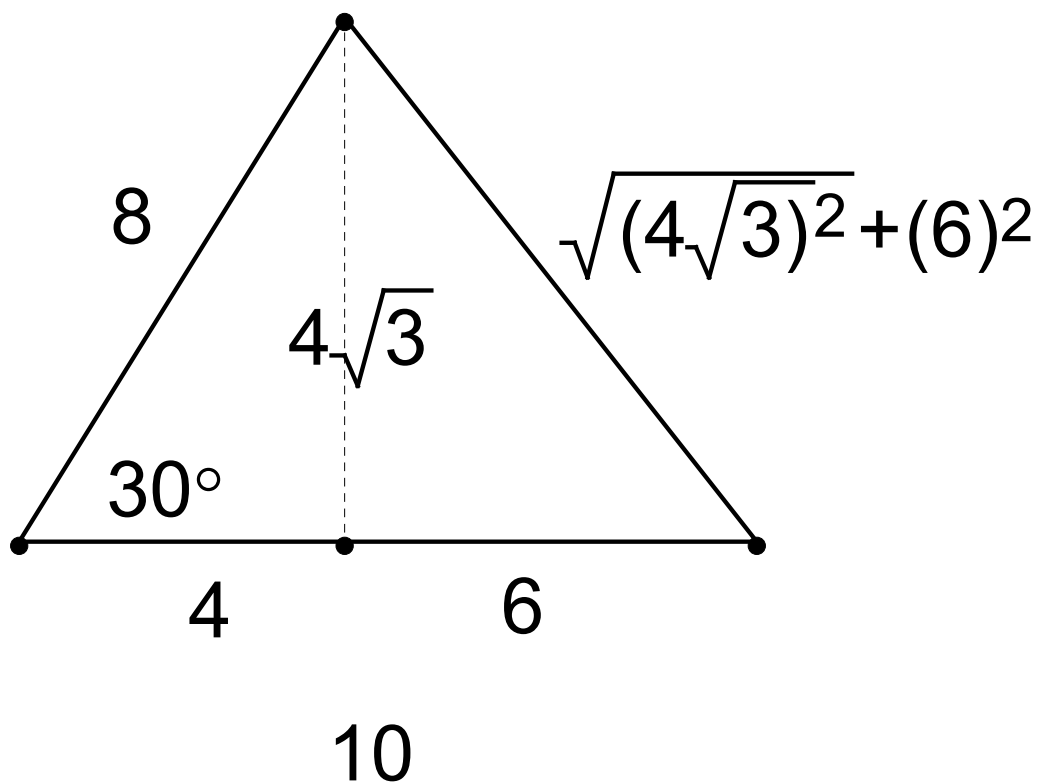
SAS

For a more general triangle, we still can do the job, eg.



What can we do here? SAS

Drop an altitude!



Now we have 2 right triangles and we can figure out the angles as before.

Handout Problems