



# Right Triangle Trigonometry

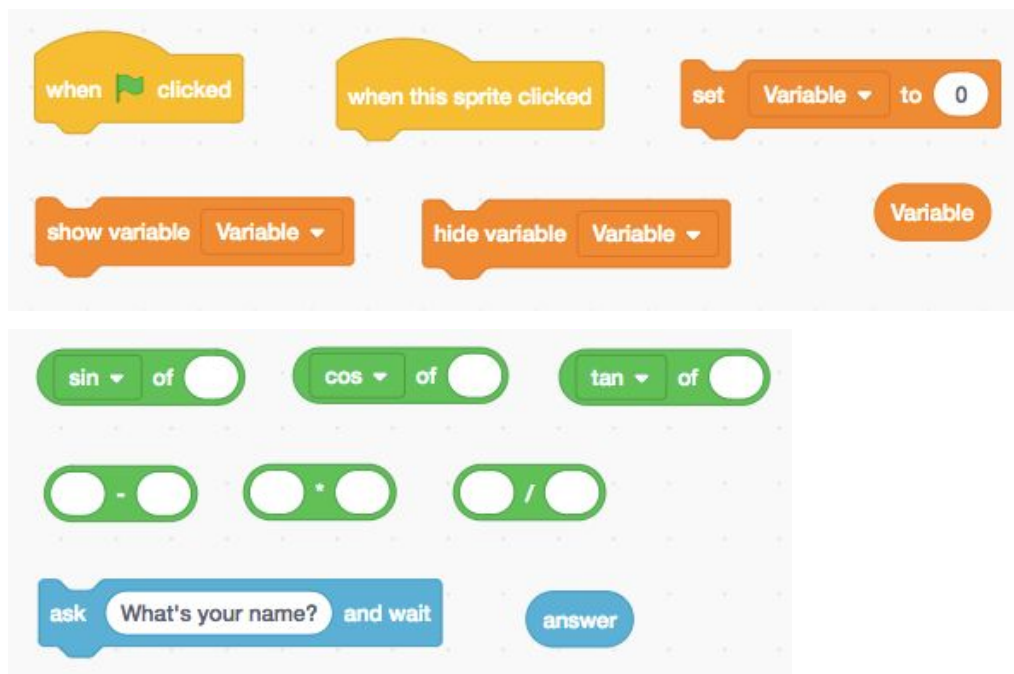
## Project Goal:

Students will create a program that asks for two pieces of a right triangle, the program will solve for the rest of the angles and side lengths.

## Standard: [CCSS.MATH.CONTENT.HSG.SRT.C.8](https://curriculum.illustrativemathematics.org/HS-G-M-G-9-12-8)

Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

## Blocks:



**Student Handout:** [Right Triangle Trigonometry Student Guide](#)

**Teacher Video:** [Right Triangle Trigonometry Teacher Video Guide](#)

# #CSandMath





### Solution:

### Under the Right Triangle Sprite:

```
when clicked
hide variable angle 1
hide variable angle 2
hide variable hypotenuse
hide variable Leg 1
hide variable Leg 2
```

### Under the Two Legs Sprite:

```
when this sprite clicked
ask "What is the length of the first leg?" and wait
set Leg 1 to answer
show variable Leg 1
ask "What is the length of the second leg?" and wait
set Leg 2 to answer
show variable Leg 2
set hypotenuse to sqrt of Leg 1 * Leg 1 + Leg 2 * Leg 2
show variable hypotenuse
set angle 1 to atan of Leg 1 / Leg 2
show variable angle 1
set angle 2 to 90 - angle 1
show variable angle 2
```





### Under the One Leg and Hypotenuse Sprite:

```
when this sprite clicked
ask "What is the length of the leg?" and wait
set Leg 1 to answer
show variable Leg 1
ask "What is the length of the hypotenuse?" and wait
set hypotenuse to answer
show variable hypotenuse
set Leg 2 to sqrt of (hypotenuse * hypotenuse - Leg 1 * Leg 1)
show variable Leg 2
set angle 1 to asin of (Leg 1 / hypotenuse)
show variable angle 1
set angle 2 to 90 - angle 1
show variable angle 2
```





### Under the Angle and Opposite Side Sprite:

```
when this sprite clicked
  ask "What is the degree measure of the angle?" and wait
  set angle 1 to answer
  show variable angle 1
  ask "What is the length of the opposite leg?" and wait
  set Leg 1 to answer
  show variable Leg 1
  set Leg 2 to Leg 1 / tan of angle 1
  show variable Leg 2
  set hypotenuse to Leg 1 / sin of angle 1
  show variable hypotenuse
  set angle 2 to 90 - angle 1
  show variable angle 2
```





### Under the Angle and Adjacent Side Sprite:

```
when this sprite clicked
ask "What is the degree measure of the angle?" and wait
set angle 1 to answer
show variable angle 1
ask "What is the length of the adjacent leg?" and wait
set Leg 2 to answer
show variable Leg 2
set Leg 1 to Leg 2 * tan of angle 1
show variable Leg 1
set hypotenuse to Leg 2 / cos of angle 1
show variable hypotenuse
set angle 2 to 90 - angle 1
show variable angle 2
```





### Under the Angle and Hypotenuse Sprite:

```
when this sprite clicked
ask "What is the degree measure of the angle?" and wait
set angle 1 to answer
show variable angle 1
ask "What is the length of the hypotenuse?" and wait
set hypotenuse to answer
show variable hypotenuse
set Leg 1 to hypotenuse * sin of angle 1
show variable Leg 1
set Leg 2 to hypotenuse * cos of angle 1
show variable Leg 2
set angle 2 to 90 - angle 1
show variable angle 2
```

