



# Conquering Quadratics- Complex Solutions

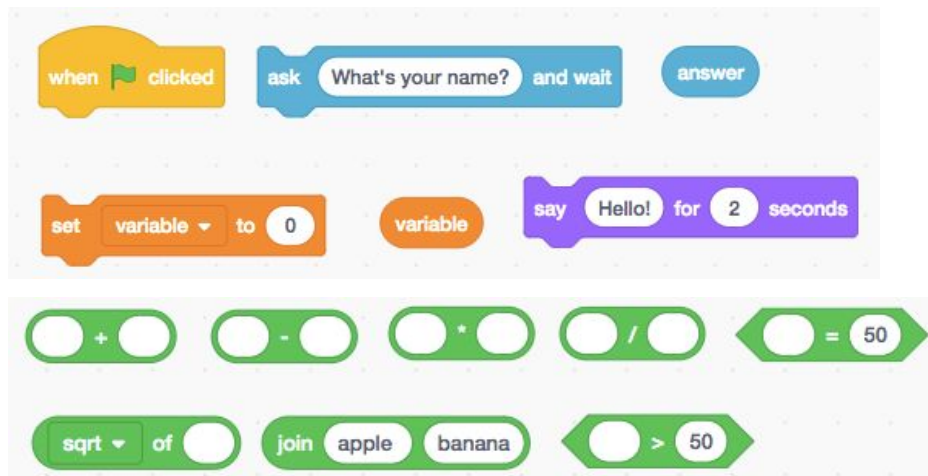
## Project Goal:

Students will create a program that will use the quadratic formula to calculate zeros of a quadratic equation, including complex solutions.

## Standard: [CCSS.MATH.CONTENT.HSA.REI.B.4.B](#)

Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ .

## Blocks:



**Student Handout:** [Conquering Quadratics- Complex Solutions Student Guide](#)

**Teacher Guide:** [Conquering Quadratics- Complex Solutions Video Tutorial](#)

# #CSandMath





### Potential Solution:

```
when clicked
  ask "What's the a value?" and wait
  set a to answer
  ask "What's the b value?" and wait
  set b to answer
  ask "What's the c value?" and wait
  set c to answer
  set discriminant to (b * b - 4 * a * c)
```

```
if (discriminant > 0) then
  Root Calculation
  say "The roots are Zero 1 and Zero 2"
else
  if (discriminant = 0) then
    Root Calculation
    say "The root is Zero 1"
  else
    say "Hang on, these roots are complex!" for 2 seconds
    Complex
    say "The roots are Zero 1 and Zero 2"
```





```
define Root Calculation
set real_1 to (-1 * b) / (2 * a)
set root_1 to sqrt of discriminant / (2 * a)
set Zero 1 to real_1 + root_1
set real_2 to (-1 * b) / (2 * a)
set root_2 to sqrt of discriminant / (2 * a)
set Zero 2 to real_1 - root_1
```

```
define Complex
set discriminant to discriminant * -1
Root Calculation
set Zero 1 to join real_1 join + join round root_1 * 10 / 10 i
set Zero 2 to join join real_2 - join round root_2 * 10 / 10 i
```

