

Synthetic Division

Project Goal:

Students will create a program that will perform synthetic division to check if a root is a solution or not.

Standard: [CCSS.MATH.CONTENT.HSA.APR.B.2](https://curriculum.illustrativemathematics.org/HS-A-APR-B-2)

Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a , the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.

Blocks:



Student Handout: [Synthetic Division Student Guide](#)

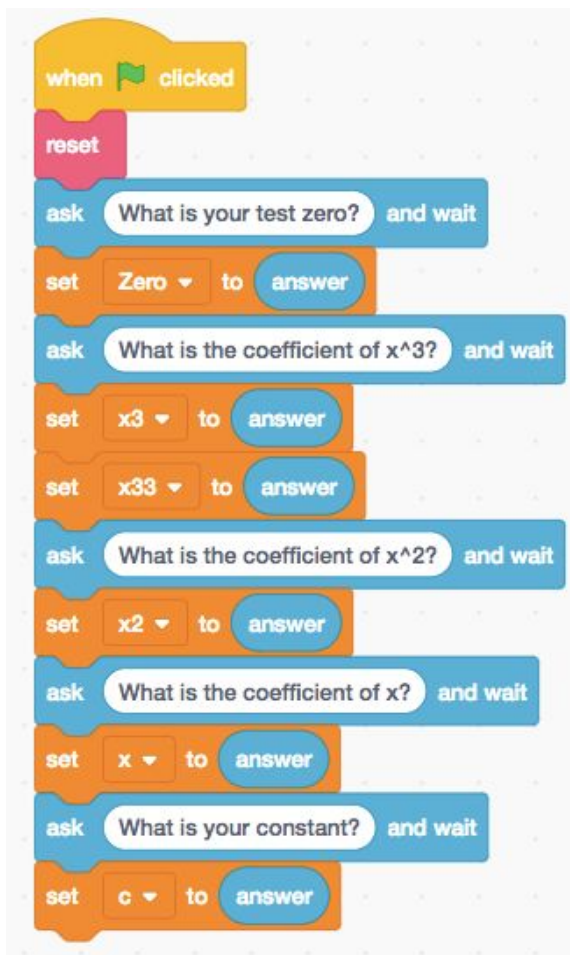
Teacher Guide: [Synthetic Division Video Tutorial](#)

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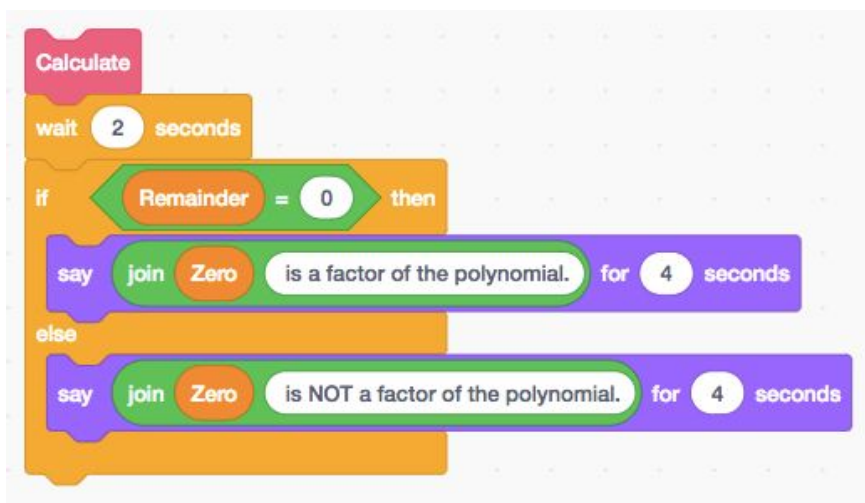


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Potential Solution:



```
when clicked
  reset
  ask "What is your test zero?" and wait
  set Zero to answer
  ask "What is the coefficient of x^3?" and wait
  set x3 to answer
  set x33 to answer
  ask "What is the coefficient of x^2?" and wait
  set x2 to answer
  ask "What is the coefficient of x?" and wait
  set x to answer
  ask "What is your constant?" and wait
  set c to answer
```



```
Calculate
  wait 2 seconds
  if (Remainder = 0) then
    say join Zero " is a factor of the polynomial." for 4 seconds
  else
    say join Zero " is NOT a factor of the polynomial." for 4 seconds
```

```
define reset
  set c to ?
  set cc to ?
  set Remainder to ?
  set Zero to ?
  set x to ?
  set x2 to ?
  set x3 to ?
  set x22 to ?
  set x33 to ?
  set x222 to ?
  set xx to ?
  set xxx to ?
```

```
define Calculate
  set x22 to Zero * x33
  set x222 to x2 + x22
  set xx to Zero * x222
  set xxx to x + xx
  set cc to Zero * xxx
  set Remainder to c + cc
```

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