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Guess the Triangle

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Guess the triangle

Create a quiz for your classmates to try

Go to the link below:
<https://scratch.mit.edu/projects/638131486>

Sign in

Click **Sign in**. Skip signing in if your teacher tells you to.

Remix

See inside

Click **Remix** if you're logged in and then the **See inside** button.



The program has 6 pre-made blocks that you will use later

Set 1

```
ask Is this an acute or obtuse triangle? Type 1 for acute and 2 for obtuse: and wait
say You got it! for 5 seconds
say No, the correct answer is 1 : an acute triangle. for 5 seconds
```

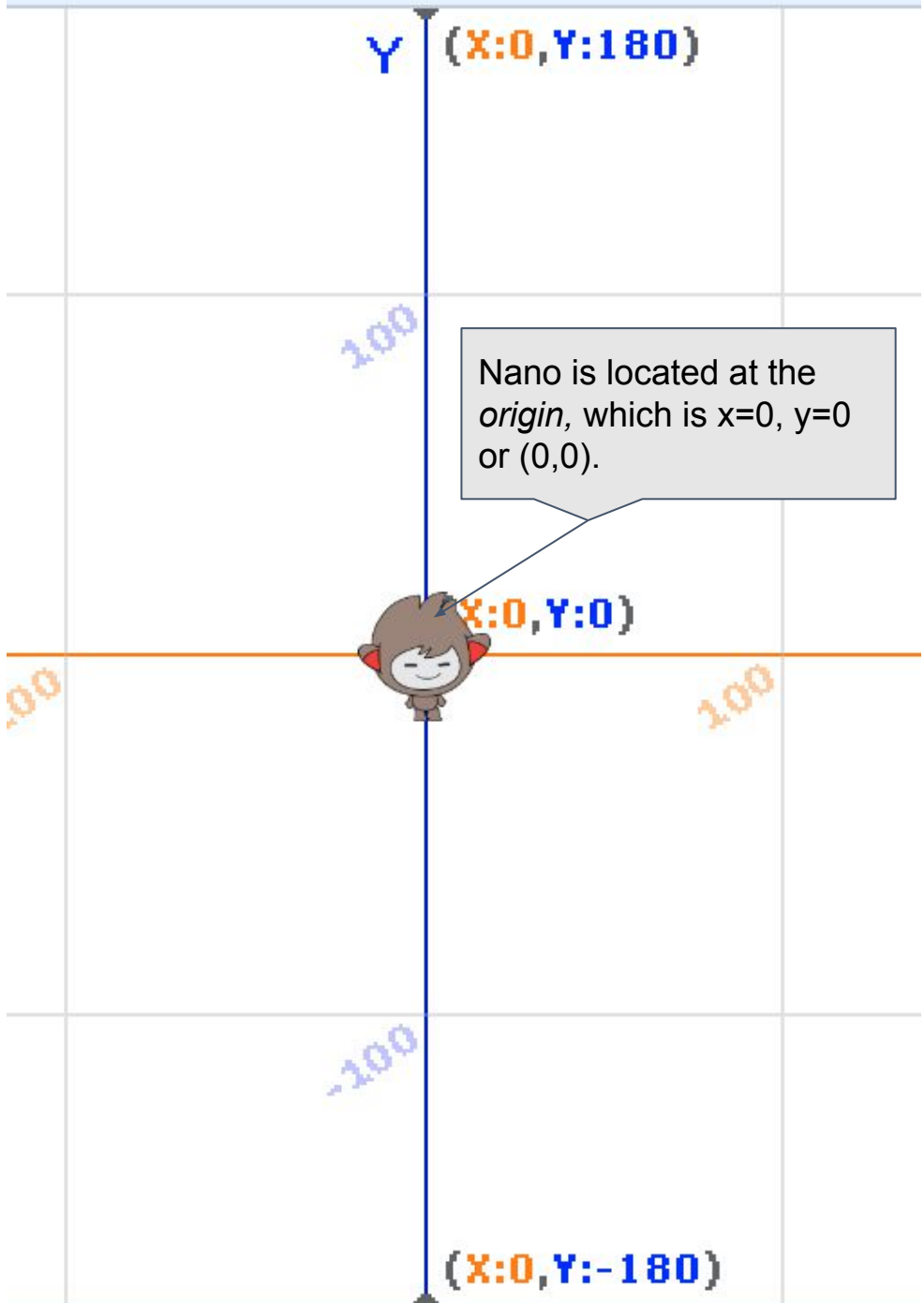
Set 2

```
ask Is this an acute or right triangle? Type 1 for acute and 2 for right. and wait
say You got it! for 5 seconds
say No, the correct answer is 2: a right triangle. for 5 seconds
```

TRY IT

Click the code blocks to see what they do





GET READY



Choose a backdrop



Xy-grid




Select Extensions



Choose pen

ADD THIS CODE



Nano

```

when green flag clicked
  point in direction 90
  pen up
  set pen size to 5
  erase all
  go to x: 0 y: 0
  pen down
  set size to 30 %

```



The sprite (Nano) will look at **90 degrees**.

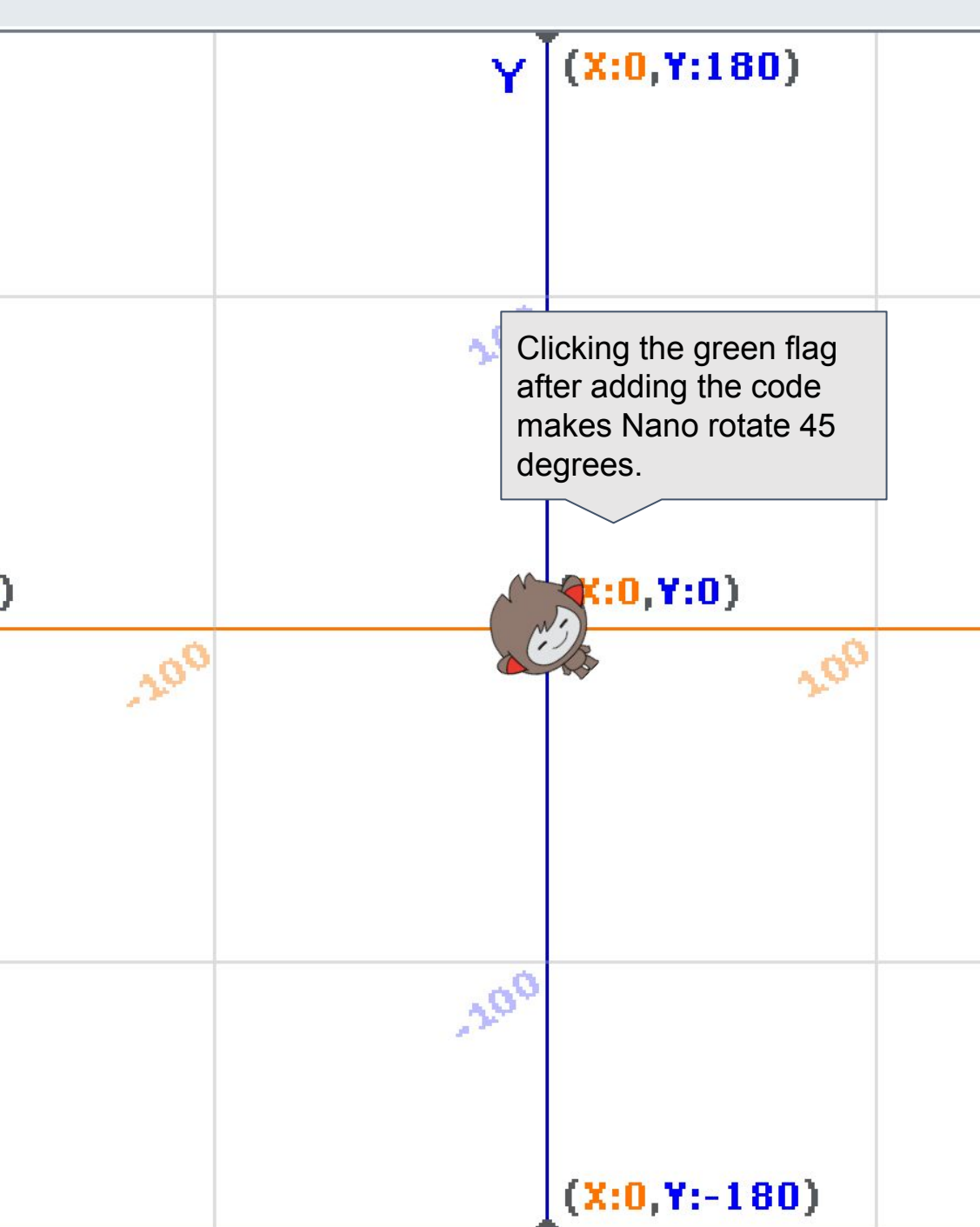
Set the pen size to **5**

Nano will go to coordinates **(0, 0)**.

Change the size of the sprite to **30** or lower so that you can see what nano is drawing.

TRY IT

Click the green flag to start →  



GET READY

Choose **Variables** —

Click the **Make a Variable** —

New variable name:

Cancel **OK**

Name this variable **exteriorAngle** and then click **OK**

ADD THIS CODE

1

```

when green flag clicked
  point in direction 90
  pen up
  set pen size to 5
  erase all
  go to x: 0 y: 0
  pen down
  set size to 30 %
  set exteriorAngle to 45
  turn exteriorAngle degrees
        
```

The sprite (Nano) will rotate 45 degrees.

2

```

when green flag clicked
  point in direction 90
  pen up
  set pen size to 5
  erase all
  go to x: 0 y: 0
  pen down
  set size to 30 %
  set exteriorAngle to 45
  turn exteriorAngle degrees
        
```

Try a few different values. When done, disconnect and delete the **set** and **turn** blocks.

TRY IT

Click the green flag to start

Y (X:0,Y:180)

Notice how 45 degree rotation looks different here than the previous slide? It is because of the difference between interior angles and exterior angles.



(X:0,Y:0)

-100

100

Math uses the *interior* angle to measure the angle in a triangle, but in Scratch, sprites are rotated by *exterior* angles. To make Scratch work more like math, we subtract the **exteriorAngle** from 180 which gives us the value for **interiorAngle**.
The number given to the "convertTo" My Block is the value you want for the interior angle we are familiar with using in Math.

(X:0,Y:-180)

GET READY

Choose **My Blocks** — My Blocks

Select **Make a Block** — Make a Block

Add an input number or text

convertTo

Name this block **convertTo** and click **Add an input**

convertTo interiorAngle

Name the input variable as **interiorAngle** and click **OK**

Cancel OK

ADD THIS CODE

```

define convertTo interiorAngle
  set exteriorAngle to 180 - interiorAngle
  turn exteriorAngle degrees
  wait 1 seconds

```

This code defines the **convertTo** block that converts to interior angle by subtracting the given value from 180.

```

when clicked
  point in direction 90
  pen up
  set pen size to 5
  erase all
  go to x: 0 y: 0
  pen down
  set size to 30 %
  convertTo 45

```

This is the value you want for the interior angle

Drag the **convertTo** block you created (find it in **My Blocks**) to the end of the code from the previous slide and enter **45** as the input.

My Blocks

Make a Block

convertTo

TRY IT

Click the green flag to start →

This is a triangle. Triangles are polygons with three sides and three angles.



Notice how we are calling the "convertTo" My Block inside the "acute" My Block. Once a My Block is defined, you can use it anywhere like any Scratch block.

Choose My Blocks

My Blocks

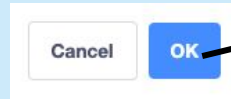
Select Make a Block



GET READY



Name this block **acute** and then click **OK**

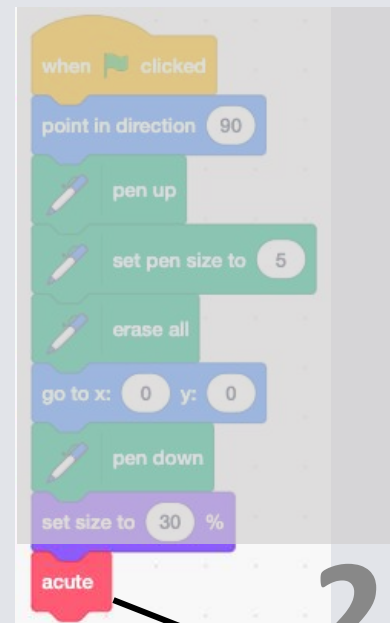


ADD THIS CODE



1

This code defines the **acute** block to draw an acute triangle.



Drag the **acute** block you created (find it in **My Blocks**) to the end of the code from the previous slide.

My Blocks

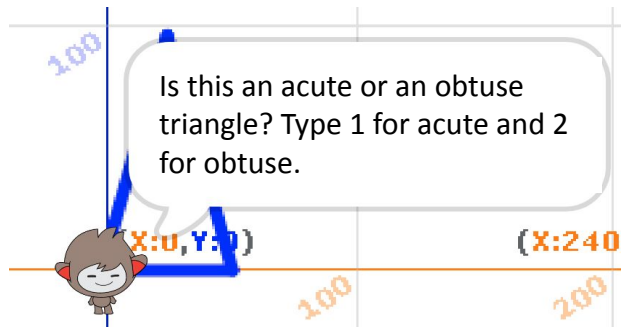
Make a Block

acute

TRY IT

Click the green flag to start

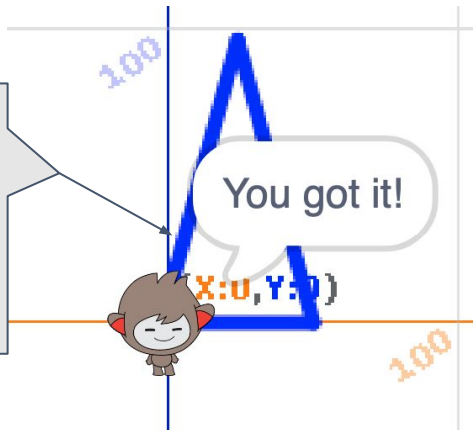




Is this an acute or an obtuse triangle? Type 1 for acute and 2 for obtuse.

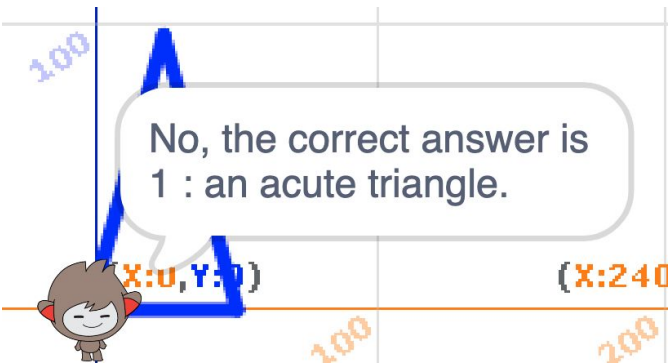
(X:0, Y:0)

(X:240, Y:0)



You got it!

(X:0, Y:0)

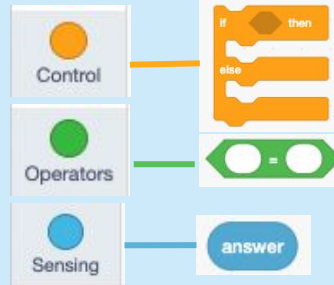


No, the correct answer is 1 : an acute triangle.

(X:0, Y:0)

(X:240, Y:0)

You will need these blocks for this step



GET READY

```

ask Is this an acute or obtuse triangle? Type 1 for acute and 2 for obtuse: and wait
say You got it! for 5 seconds
say No, the correct answer is 1 : an acute triangle. for 5 seconds
  
```

ADD THIS CODE

```

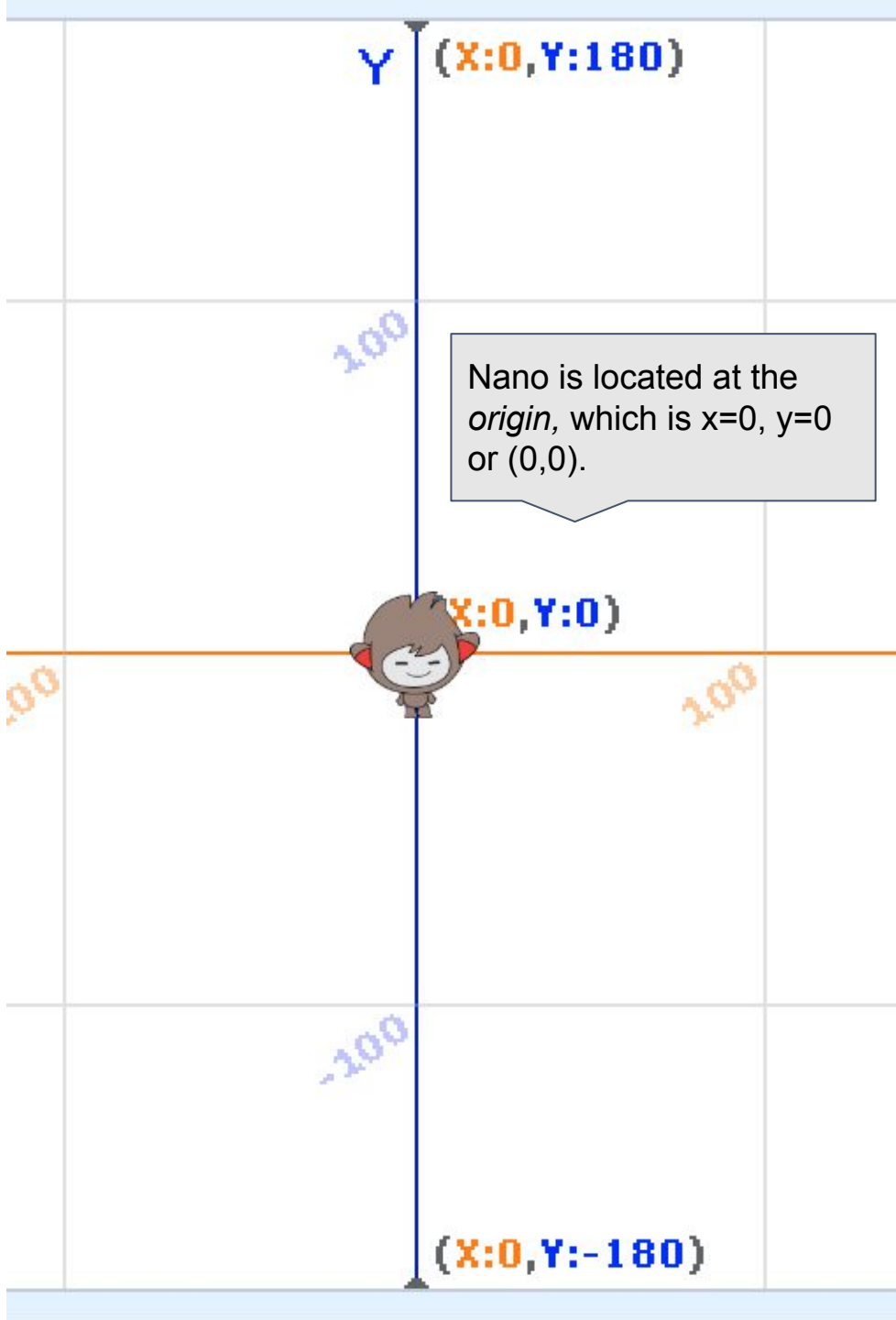
when clicked
point in direction 90
pen up
set pen size to 5
erase all
go to x: 0 y: 0
pen down
set size to 30 %
acute
ask Is this an acute or obtuse triangle? Type 1 for acute and 2 for obtuse. and wait
if answer = 1 then
say You got it! for 5 seconds
else
say No, the correct answer is 1 : an acute triangle. for 5 seconds
  
```

After you connect the code, nano asks a question. Since all the interior angles of the triangle are acute, the correct answer is **1**.

TRY IT

Click the green flag to start





EDIT CODE



```

when green flag clicked
  point in direction 90
  pen up
  set pen size to 5
  erase all
  go to x: 0 y: 0
  pen down
  set size to 30 %
  
```

Disconnect and delete this part of the code

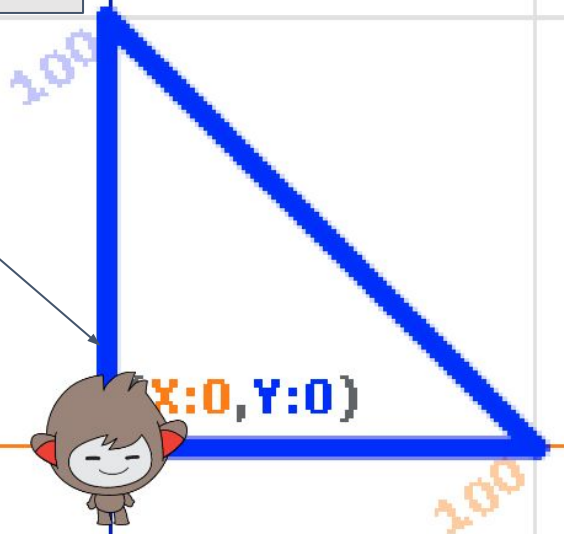
TRY IT

Click the green flag to start



This is a *right* triangle. *Right* triangles have one angle that is exactly 90 degrees.

Y (X:0, Y:180)



(X:0, Y:0)

GET READY

Choose My Blocks

My Blocks

Select Make a Block

My Blocks

Make a Block

right

Cancel OK

Name this block **right** and then click **OK**

ADD THIS CODE

```
define right
  move 100 steps
  convertTo 45
  move 142 steps
  convertTo 45
  move 100 steps
  convertTo 90
  pen up
```

1

This code defines the *right* block to draw a right triangle.

```
when clicked
  point in direction 90
  pen up
  set pen size to 5
  erase all
  go to x: 0 y: 0
  pen down
  set size to 30 %
  right
```

2

Drag the **right** block you created (find it in **My Blocks**) to the end of the code from the previous slide.

My Blocks

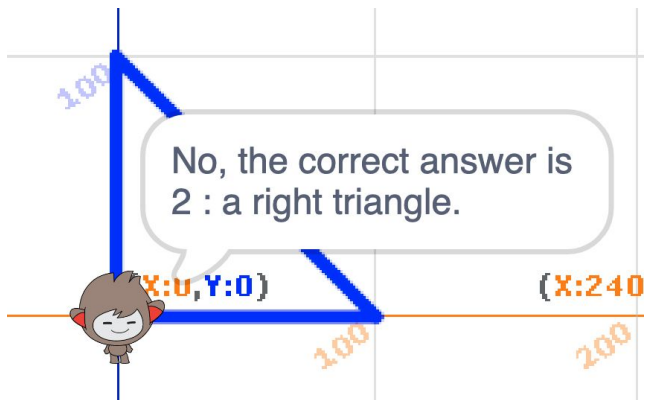
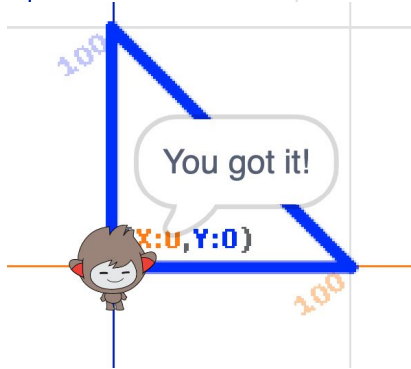
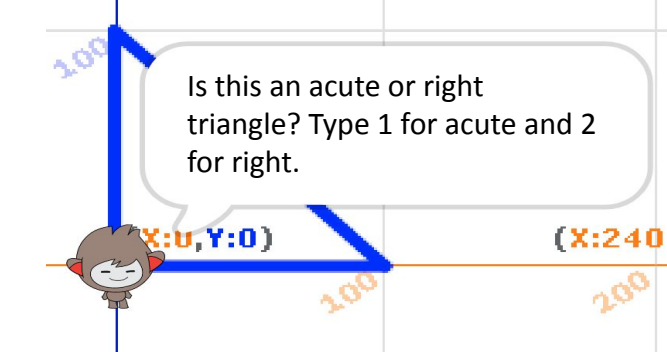
Make a Block

right

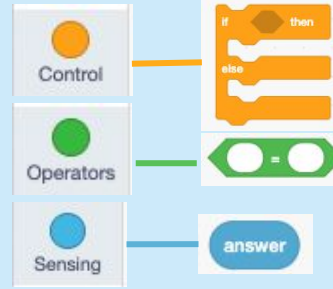
TRY IT

Click the green flag to start





You will need these blocks for this step



GET READY

```

ask Is this an acute or right triangle? Type 1 for acute and 2 for right. and wait
say You got it! for 5 seconds
say No, the correct answer is 2: a right triangle. for 5 seconds
  
```

ADD THIS CODE

```

when clicked
point in direction 90
pen up
set pen size to 5
erase all
go to x: 0 y: 0
pen down
set size to 30 %
right
  
```

Use the blocks above to complete the hidden code. You should get the output you see on the left hand side of this slide

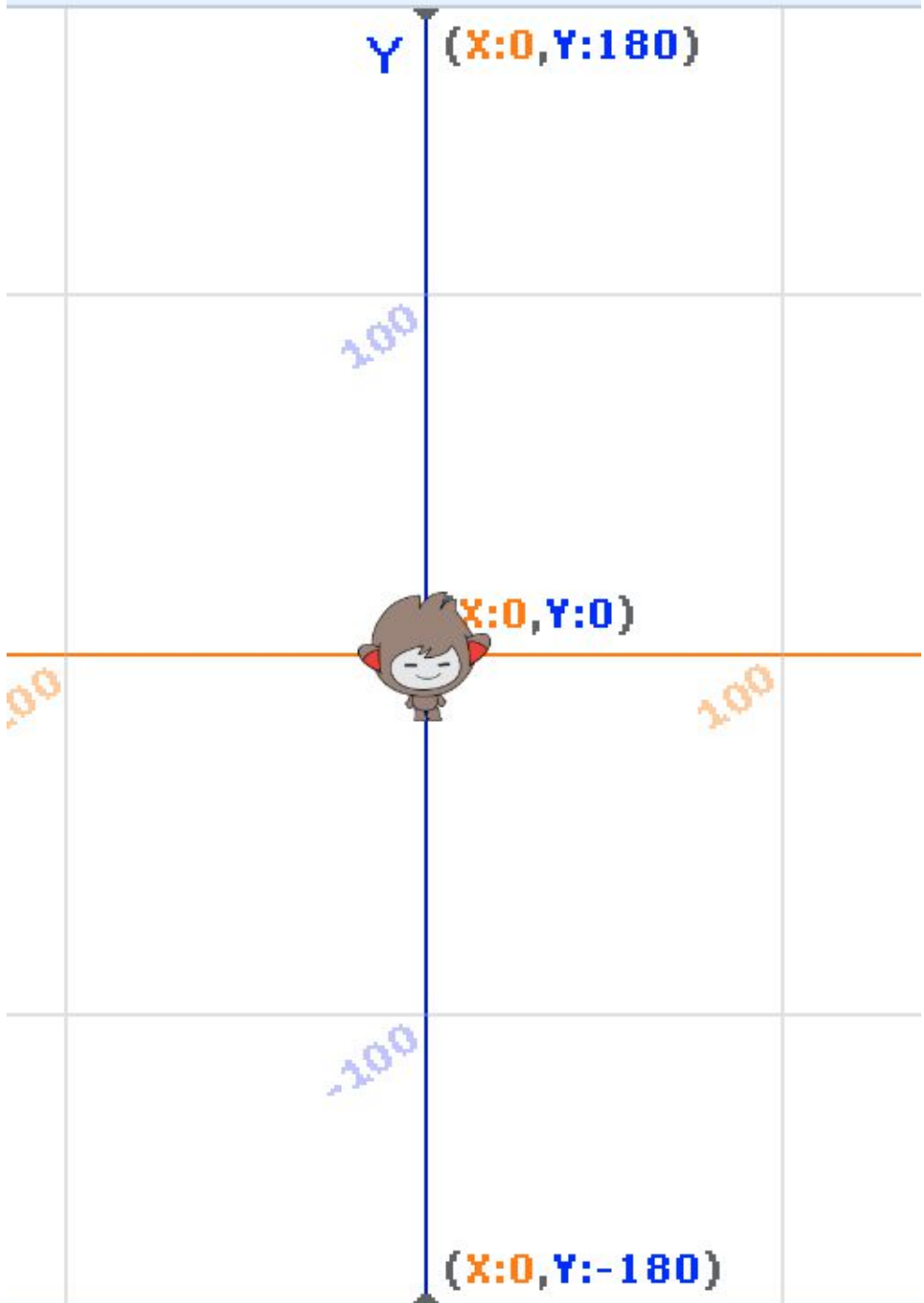
```

[Hidden code blocks, including 'say' and 'wait' blocks]
  
```

TRY IT

Click the green flag to start





GET READY

Go to the link below:
<https://scratch.mit.edu/projects/638165336>

Remix

See inside

Click **Remix** if you're logged in and then the **See inside** button.

The program has 3 pre-made blocks, the set-up code, and the convertTo block

```

ask Is this an acute or obtuse triangle? Type 1 for acute and 2 for obtuse. and wait
say You got it! for 5 seconds
say No, the correct answer is 2: an obtuse triangle. for 5 seconds
  
```

Set-up code

```

when clicked
point in direction 90
pen up
set pen size to 5
erase all
go to x: 0 y: 0
pen down
set size to 30 %
  
```

```

define convertTo interiorAngle
set exteriorAngle to 180 - interiorAngle
turn exteriorAngle degrees
wait 1 seconds
  
```

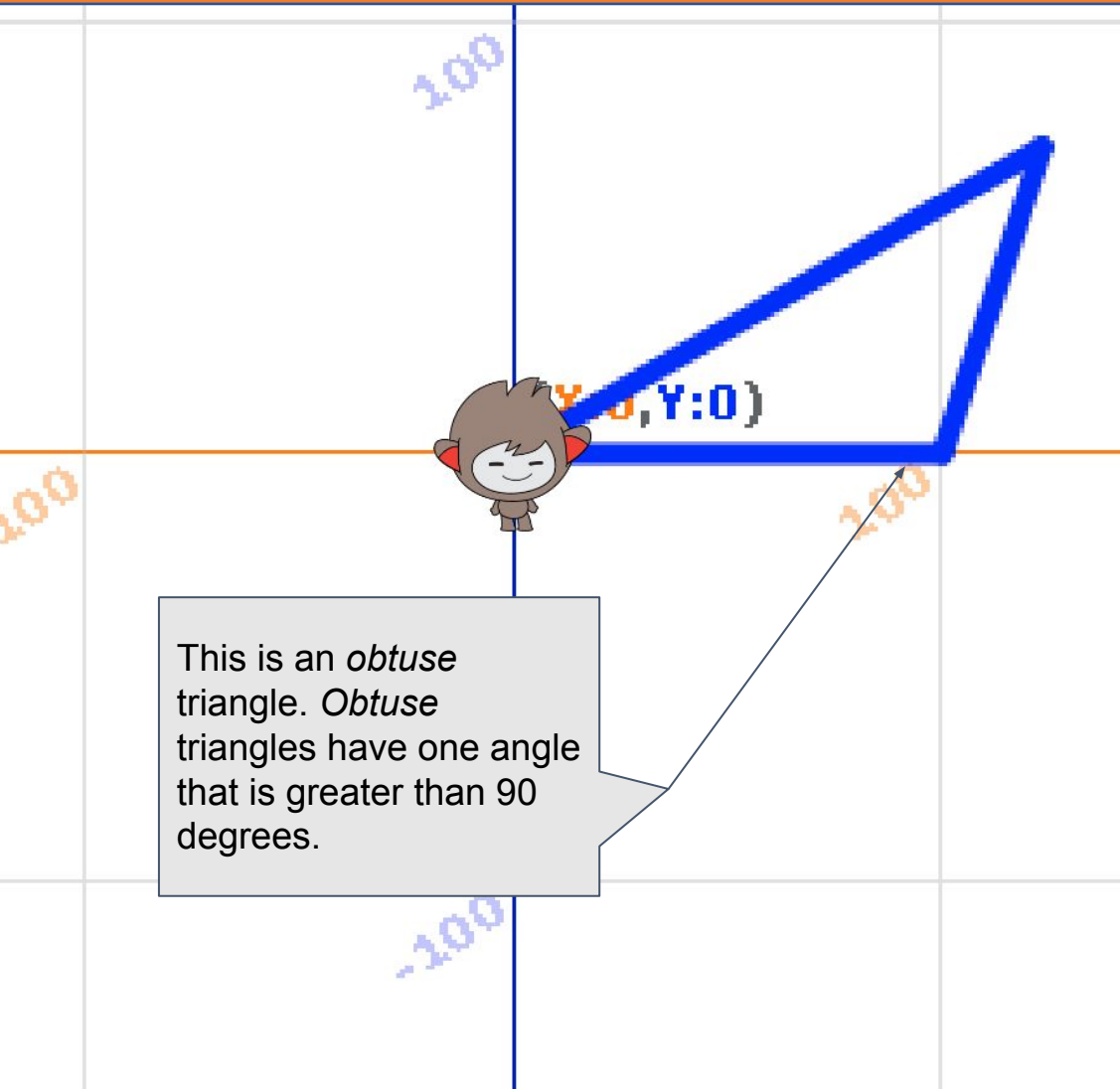
TRY IT

Click the code blocks to see what they do

Challenge Task:

Change the code so that nano draws an obtuse triangle.

Hint: All three interior angles in a triangle add up to 180



GET READY

Choose My Blocks

My Blocks

Select Make a Block

Make a Block

obtuse

Cancel OK

Name this block **obtuse** and then click **OK**

ADD THIS CODE

```
define obtuse
  move 100 steps
  convertTo 100
  move 75 steps
  convertTo 42
  move 142 steps
  convertTo 30
  pen up
```

Enter the correct obtuse angle value based on the other angles in the triangle.

This code defines the *obtuse* block to draw an obtuse triangle.

```
when clicked
  point in direction 90
  pen up
  set pen size to 5
  erase all
  go to x: 0 y: 0
  pen down
  obtuse
```

Drag the **obtuse** block you created (find it in **My Blocks**) to the end of the code from the previous slide.

My Blocks

Make a Block

obtuse

TRY IT

Click the green flag to start

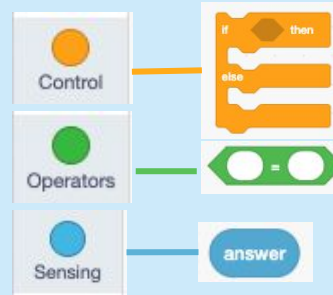


Is this an acute or obtuse triangle? Type 1 for acute and 2 for obtuse.

You got it!

No, the correct answer is 2 : an obtuse triangle.

You will need these blocks for this step



GET READY

```

ask Is this an acute or obtuse triangle? Type 1 for acute and 2 for obtuse. and wait
say You got it! for 5 seconds
say No, the correct answer is 2: an obtuse triangle. for 5 seconds
  
```

ADD THIS CODE

```

when clicked
point in direction 90
pen up
set pen size to 5
erase all
go to x: 0 y: 0
pen down
obtus
  
```

Use the blocks above to complete the hidden code. You should get the output you see on the left hand side of this slide

TRY IT

Click the green flag to start



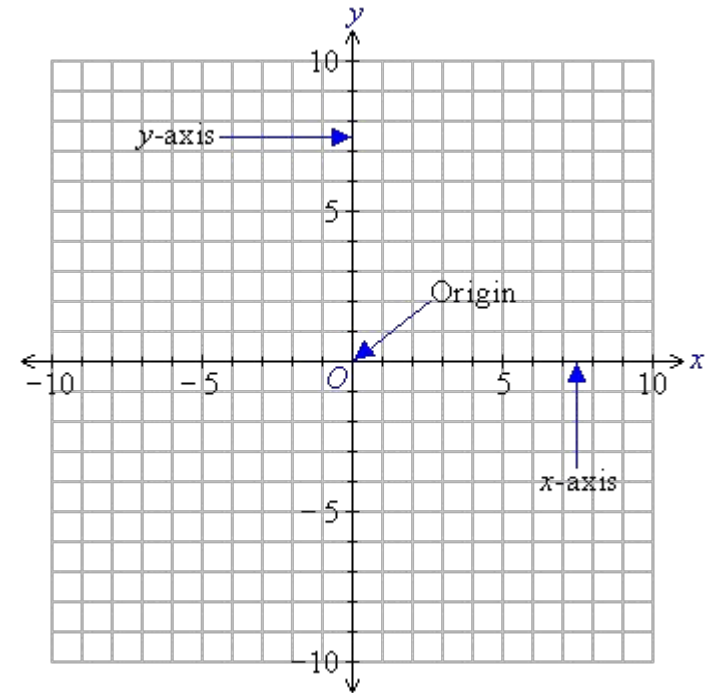
Math Definitions

Coordinate Plane

x-axis - the horizontal number line on the grid

y-axis - the vertical number line on the grid

Origin - the location where the x-axis and y-axis intersect at the point (0,0)



Ordered Pair - every point on the coordinate plane is described by an ordered pair with an x-coordinate (horizontal location) and y-coordinate (vertical location)

(x, y)
x-coordinate \uparrow \uparrow y-coordinate

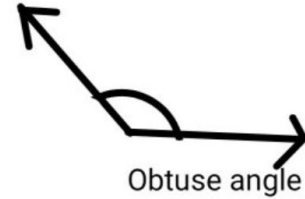
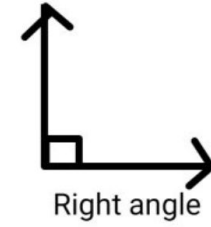
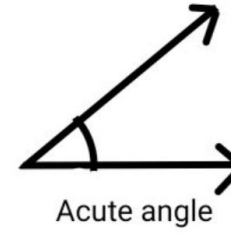
Math Definitions

Triangles

Acute Angle - an angle that measures less than 90°

Obtuse Angle - an angle that measures more than 90°

Right Angle - an angle that measures exactly 90°



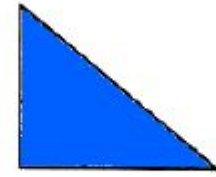
Obtuse Triangle - a triangle with one obtuse angle

Acute Triangle - a triangle with three acute angles

Right Triangle - a triangle with one right angle



acute



right

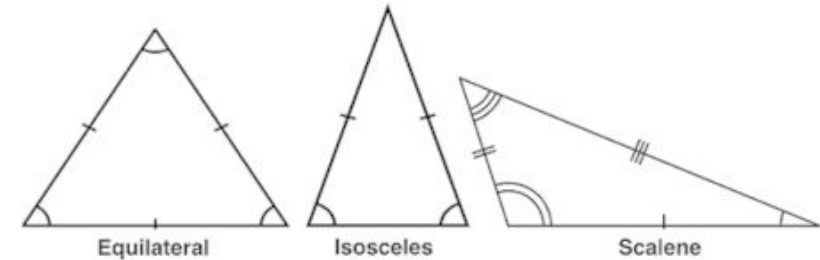


obtuse

Equilateral Triangle - a triangle with three congruent sides

Isosceles Triangle - a triangle with two congruent sides

Scalene Triangle - a triangle with no congruent sides



Challenge Task Solution

Obtuse angle value: 108°