

Logo Blocks Activities: Intermediate Mode

These activities use the Intermediate mode blocks in Logo Blocks. They progress from simple code to more complex challenges.

Sample solutions are provided at the end. Your students' solutions may vary, of course.

Encourage your students to send us their programs. No code is too simple to share with others. We want to build a community of users and you and your students can help do that.

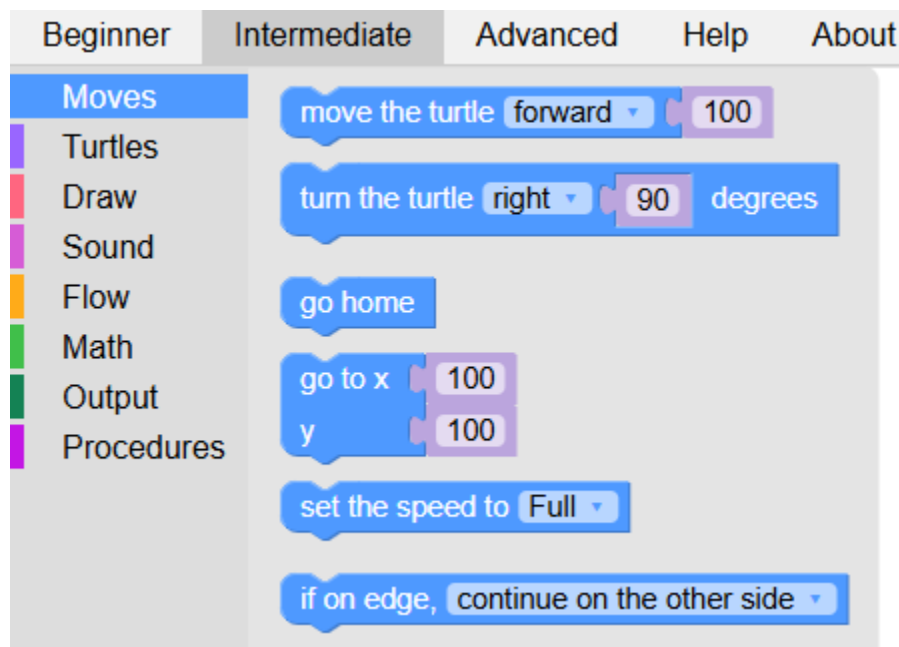
To send us your program, please use the Customer Contribution Form on our website.

<https://www.terrpinlogo.com/forms/share.html>

Under topic, please choose "I would like to share my Logo program."

Shortly after we receive your form, we will be in touch with you!

Thank you for using Logo Blocks!



Intermediate

Logo Blocks Activity Card #1



Colorful Square

Can you create this colorful square using the *repeat* block?



Use the *pen width* block to get a thicker line.

Use a *random color* so it is different every time!

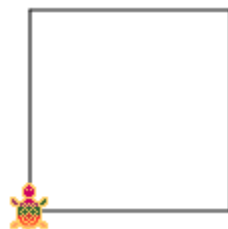
Intermediate

Logo Blocks Activity Card #2



SETXY Square

Can you draw a square using only the *go to x y* block?



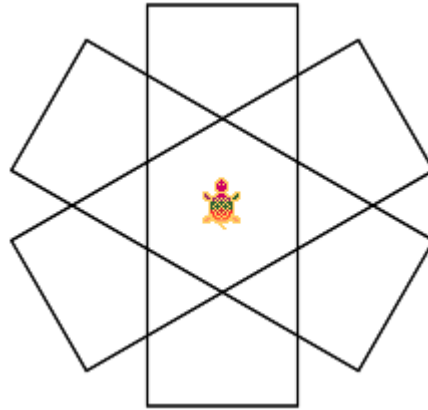
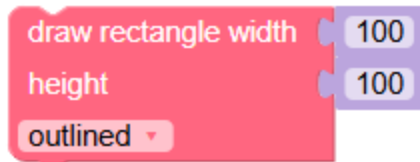
Intermediate

Logo Blocks Activity Card #3



Fun with Rectangles

Can you use the *rectangle* block to create this design?



Change the numbers in the block and use the *repeat* block.

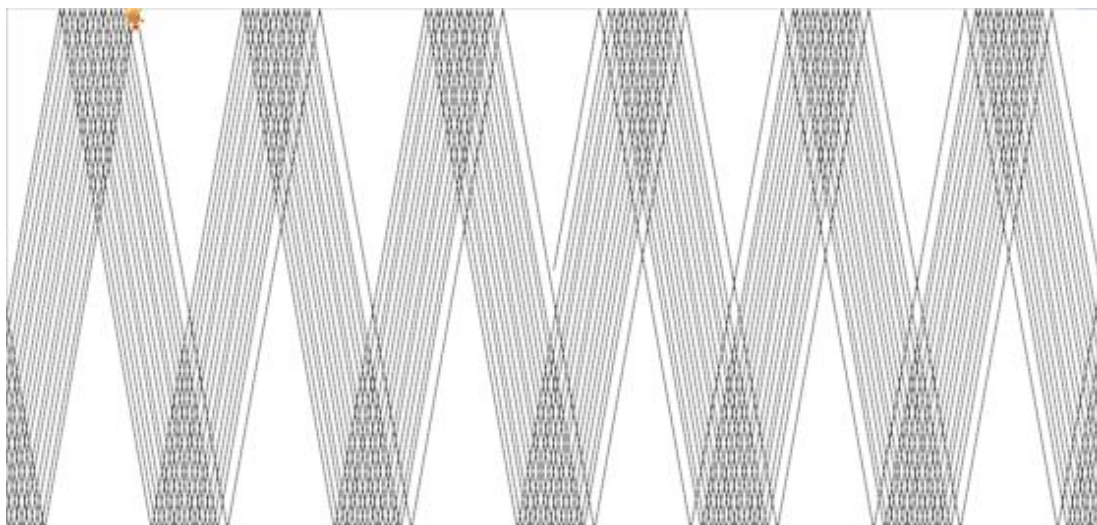
Intermediate

Logo Blocks Activity Card #4



Bouncing Turtle

Start with the *if on edge* block in Moves. Turn the turtle a little, then send it forward a very large number and see what happens!



Intermediate

Logo Blocks Activity Card #5



Introduce Yourself

Can you use the *draw text* block to type a greeting?

draw text “ Hello ”

Hello!



My name is

Morgan.

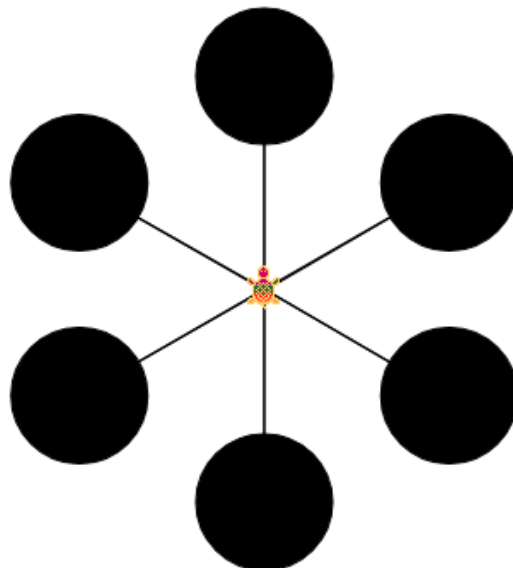
Intermediate

Logo Blocks Activity Card #6



Draw Some Lollipops

Can you use the *repeat* and *draw circle* blocks to make this design?



Intermediate

Logo Blocks Activity Card #7



Decoding the Code, Part 1

Can you figure out what this Logo program will draw?

Logo Code	
1	<i>REPEAT</i> 6 [
2	<i>FORWARD</i> 150
3	<i>BACK</i> 75
4	<i>RIGHT</i> 60
5]

Translate the Logo code into Logo Blocks and see if you were right!

Intermediate

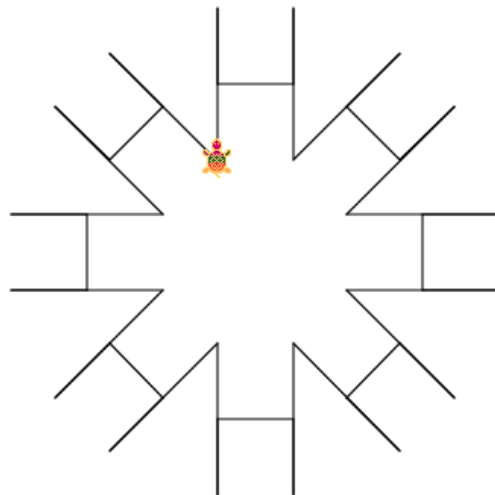
Logo Blocks Activity Card #8



Draw a Letter and Get Creative!

Write a procedure to draw a letter.

Then do something interesting with it, as in this example.

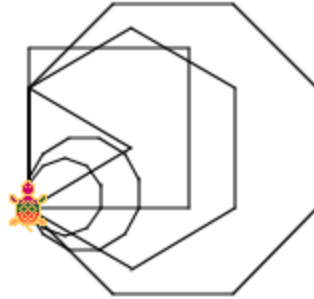


Intermediate

Logo Blocks Activity Card #9

Draw Any Polygon

Can you write a procedure with 3 inputs to draw all these shapes?
In fact, you could use your procedure to draw any regular polygon!

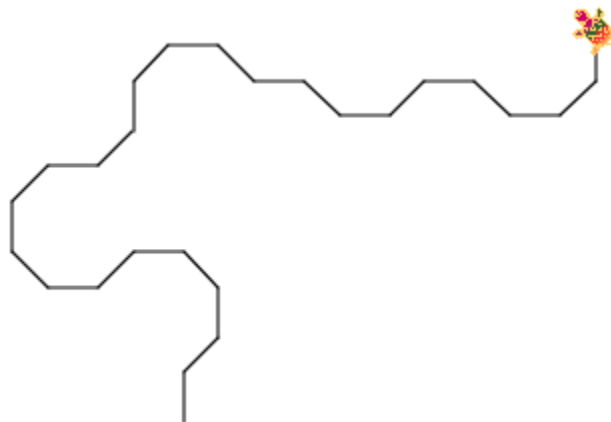


Then try writing a procedure that requires just two inputs to draw any polygon.

Intermediate

Logo Blocks Activity Card #10

Send the Turtle on a Random Walk



Use Logo Blocks to choose a random number from 1 to 2.
IF it is 1, THEN turn right, ELSE turn left. Go forward a little.

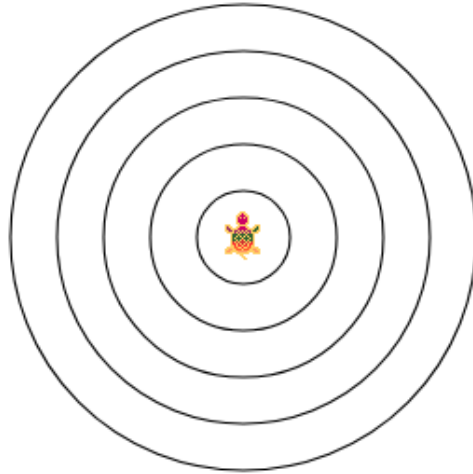
Intermediate

Logo Blocks Activity Card #11



Concentric Circles

Can you draw this design using the *draw circle* block?



For a challenge, write a procedure that takes an input and stops making circles when the size gets to be a certain number.

Intermediate

Logo Blocks Activity Card #12



Decoding the Code, Part 2

Can you figure out what this Logo program will draw?

Translate the Logo code into Logo Blocks and see if you were right!

Logo Code

```
1 TO MYSTERY
2   REPEAT 3 [
3     FORWARD 80
4     RIGHT 120
5   ]
6 END
7
8 REPEAT 12 [
9   MYSTERY
10  FORWARD 80
11  RIGHT 30
12 ]
13
14 MYSTERY
```

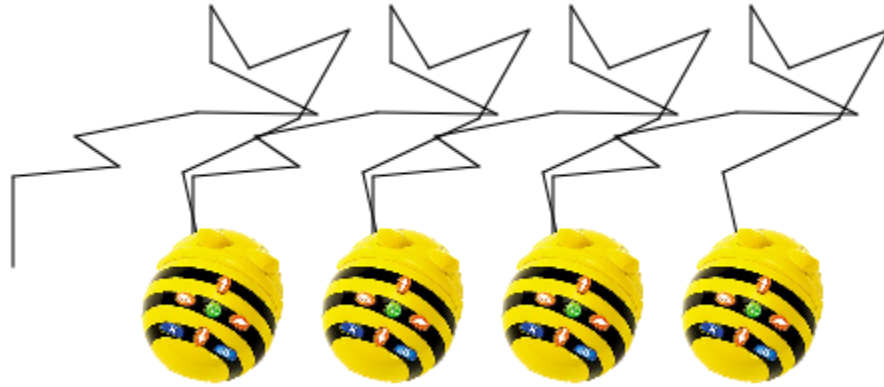
Intermediate

Logo Blocks Activity Card #13



Dancing Bee-Bots!

Can you get a few Bee-Bots to do a dance together?
Maybe it will look like this!



Use random moves and turns and the *make a line of turtles* block.

Intermediate

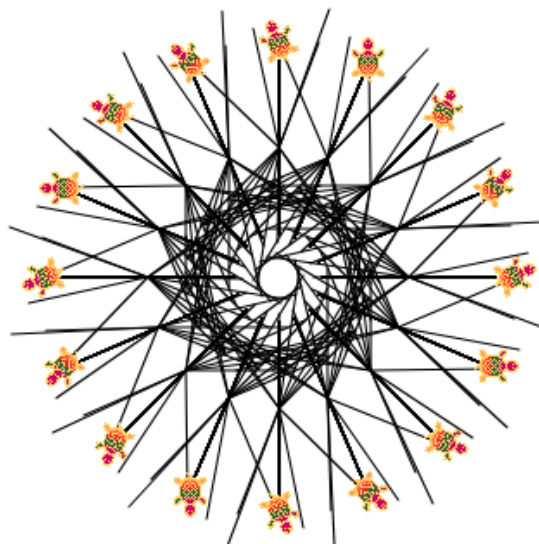
Logo Blocks Activity Card #14



Turtles in the Round

Can you use the *make a circle* block to make a design like this?

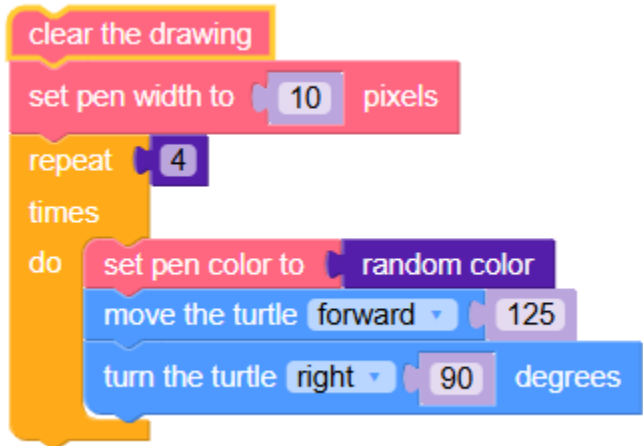
Hint: It uses a couple of blocks for turning and moving random amounts



Solutions

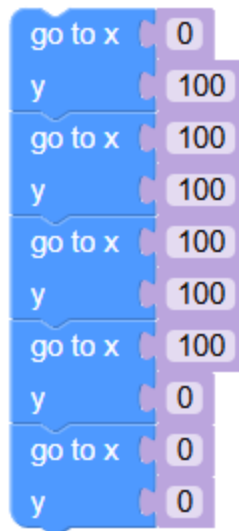
There are usually many ways to solve each activity. Below is the code we used for each one. Any code that produces the correct result is fine! Students may learn new ideas by looking at solutions that are different from theirs.

Activity Card #1: Colorful Square



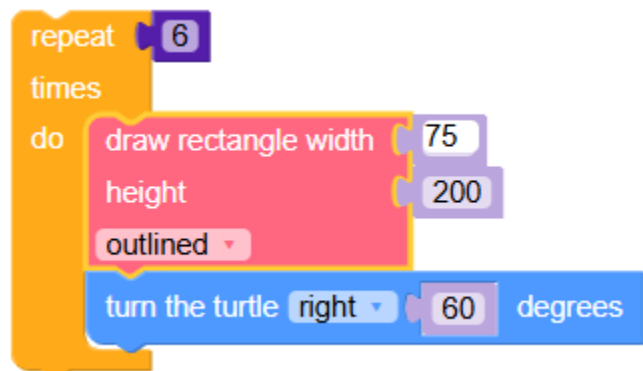
```
clear the drawing
set pen width to 10 pixels
repeat 4 times
do
  set pen color to random color
  move the turtle forward 125
  turn the turtle right 90 degrees
```

Activity Card #2: SETXY Square



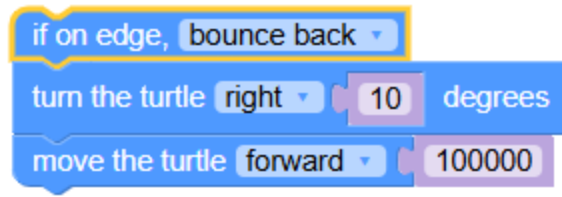
```
go to x 0
y 100
go to x 100
y 100
go to x 100
y 100
go to x 100
y 100
go to x 100
y 0
go to x 0
y 0
```

Activity Card #3: Fun with Rectangles



```
repeat 6 times
do
  draw rectangle width 75
  height 200
  outlined
  turn the turtle right 60 degrees
```

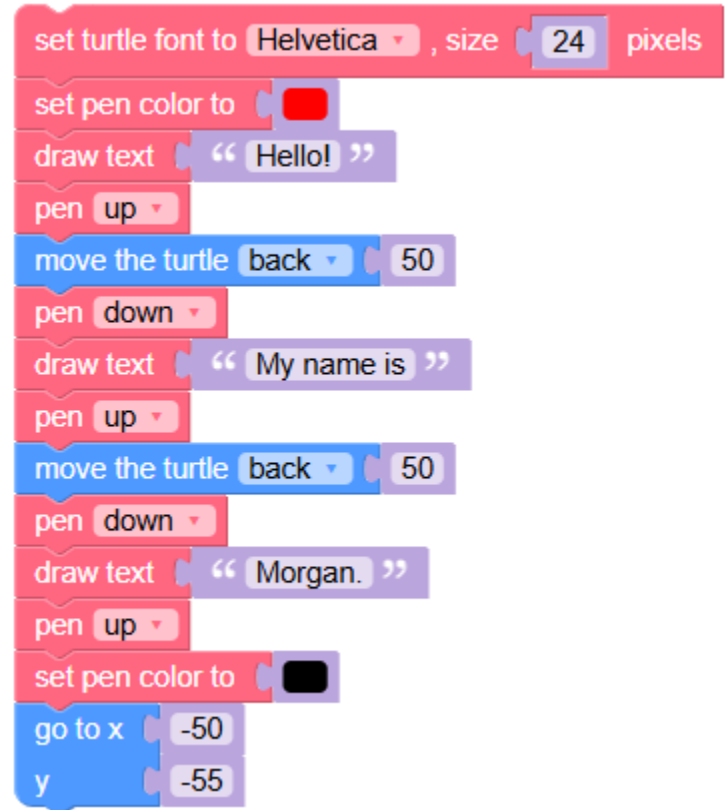
Activity Card #4: Bouncing Turtle



```
if on edge, bounce back
turn the turtle right 10 degrees
move the turtle forward 100000
```

The code consists of three blocks: an 'if on edge, bounce back' block, a 'turn the turtle right 10 degrees' block, and a 'move the turtle forward 100000' block.

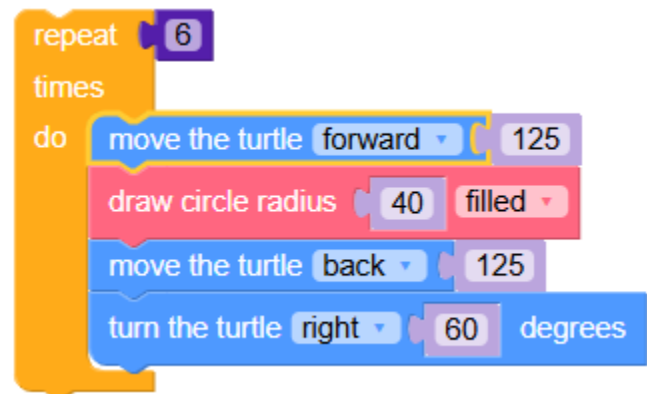
Activity Card #5: Introduce Yourself



```
set turtle font to Helvetica, size 24 pixels
set pen color to red
draw text "Hello!"
pen up
move the turtle back 50
pen down
draw text "My name is "
pen up
move the turtle back 50
pen down
draw text "Morgan."
pen up
set pen color to black
go to x -50
y -55
```

The code consists of the following blocks: 'set turtle font to Helvetica, size 24 pixels', 'set pen color to red', 'draw text "Hello!"', 'pen up', 'move the turtle back 50', 'pen down', 'draw text "My name is "', 'pen up', 'move the turtle back 50', 'pen down', 'draw text "Morgan."', 'pen up', 'set pen color to black', 'go to x -50', and 'y -55'.

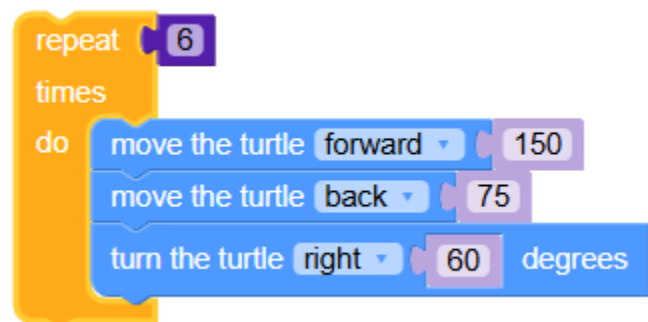
Activity Card #6: Draw Some Lollipops!



```
repeat 6 times
do
move the turtle forward 125
draw circle radius 40 filled
move the turtle back 125
turn the turtle right 60 degrees
```

The code consists of a 'repeat 6 times' block containing four 'do' blocks: 'move the turtle forward 125', 'draw circle radius 40 filled', 'move the turtle back 125', and 'turn the turtle right 60 degrees'.

Activity Card #7: Decode the Code, Part 1!



```
repeat 6 times
do
move the turtle forward 150
move the turtle back 75
turn the turtle right 60 degrees
```

The code consists of a 'repeat 6 times' block containing three 'do' blocks: 'move the turtle forward 150', 'move the turtle back 75', and 'turn the turtle right 60 degrees'.

Activity Card #8: Draw a Letter and Get Creative

```
To MYSTERY with 0 inputs:  
  move the turtle forward 100  
  move the turtle back 50  
  turn the turtle right 90 degrees  
  move the turtle forward 50  
  turn the turtle left 90 degrees  
  move the turtle forward 50  
  move the turtle back 100  
  
repeat 8 times  
  do  
    call MYSTERY  
    turn the turtle right 45 degrees
```

Activity Card #9: Draw Any Polygon

Three input version (easier):

```
To MYPROC with 3 inputs: SIDES SIZE ANGLE  
  repeat input SIDES times  
  do  
    move the turtle forward input SIZE  
    turn the turtle right input ANGLE degrees
```

```
call MYPROC with  
  SIDES 4  
  SIZE 80  
  ANGLE 90
```

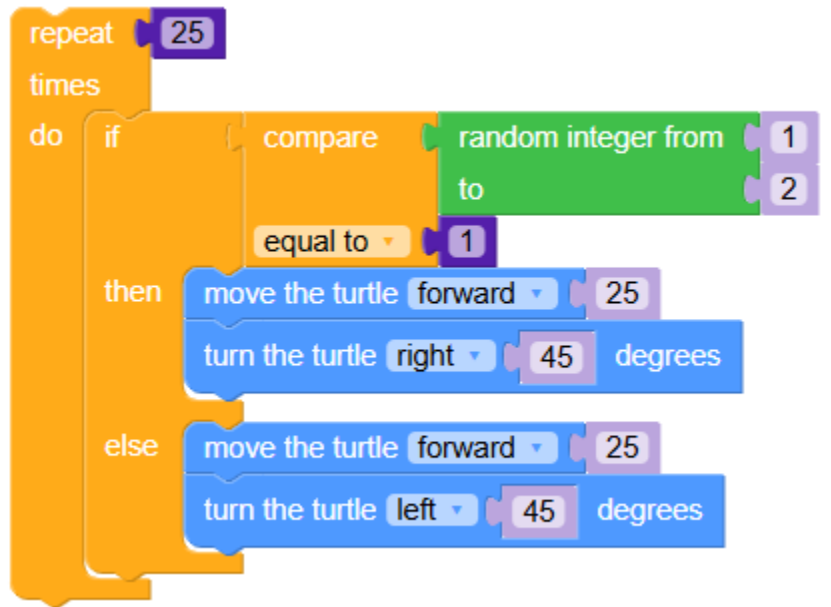
Two input version (harder):

This version demonstrates the “Total Turtle Trip Theorem,” which states that to draw a regular polygon, the total of all the angles that the turtle needs to turn is 360.

```
To MYPROC with 2 inputs: SIDES SIZE  
  repeat input SIDES times  
  do  
    move the turtle forward input SIZE  
    turn the turtle right 360 / input SIDES degrees
```

```
call MYPROC with  
  SIDES 4  
  SIZE 80
```

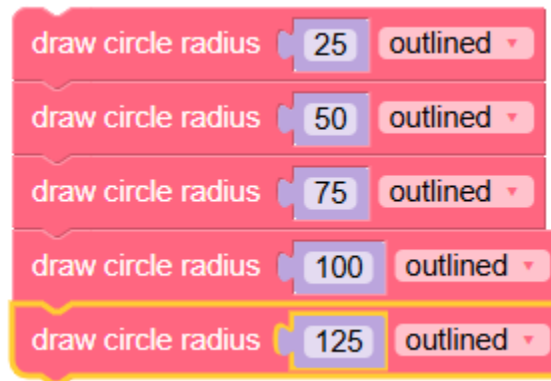
Activity Card #10:
Send the Turtle on a Random Walk



```
repeat 25 times
do
  if (compare random integer from 1 to 2 equal to 1)
  then
    move the turtle forward 25
    turn the turtle right 45 degrees
  else
    move the turtle forward 25
    turn the turtle left 45 degrees
```

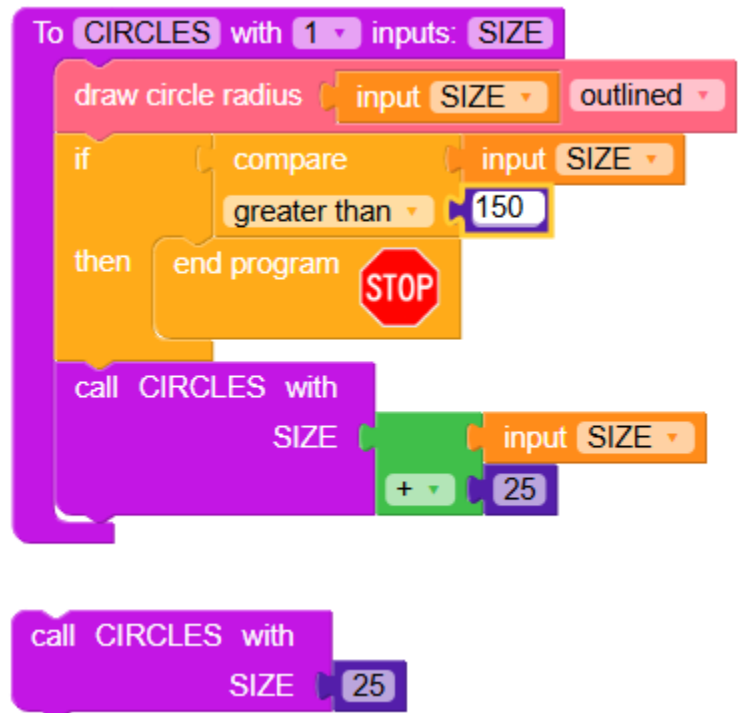
Activity Card #11: Concentric Circles

Easier version:



```
draw circle radius 25 outlined
draw circle radius 50 outlined
draw circle radius 75 outlined
draw circle radius 100 outlined
draw circle radius 125 outlined
```

Harder version:



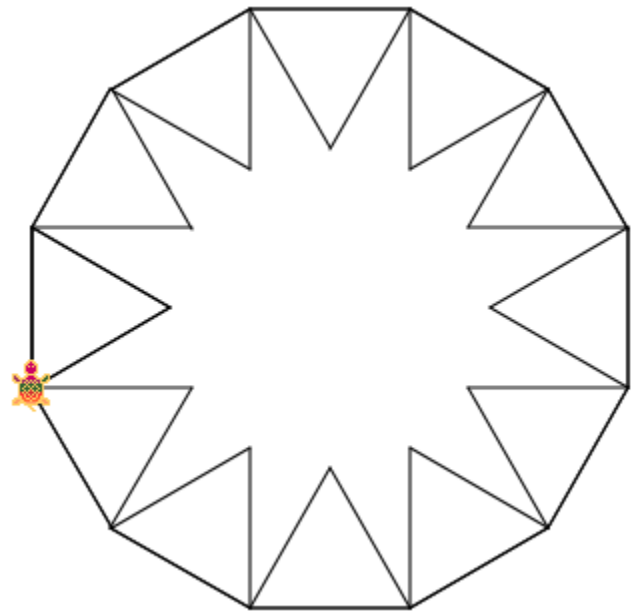
```
To CIRCLES with 1 inputs: SIZE
  draw circle radius input SIZE outlined
  if (compare input SIZE greater than 150)
  then
    end program STOP
  call CIRCLES with SIZE + 25
call CIRCLES with SIZE 25
```

Activity Card #12: Decoding the Code, Part 2

```
To MYSTERY with 0 inputs:  
repeat 3  
times  
do  
  move the turtle forward 80  
  turn the turtle right 120 degrees
```

```
repeat 12  
times  
do  
  call MYSTERY  
  move the turtle forward 80  
  turn the turtle right 30 degrees
```

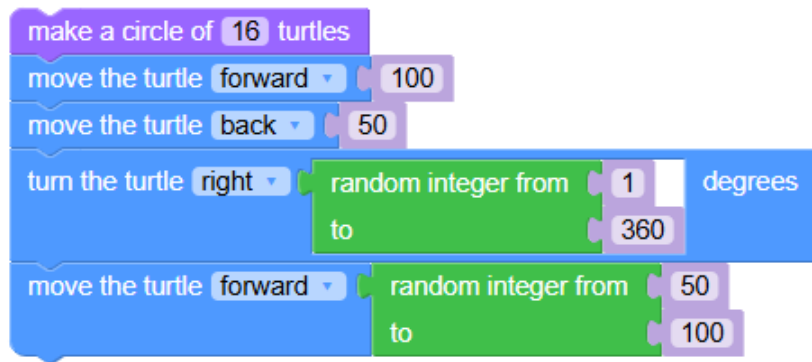
```
call MYSTERY
```



Activity Card #13: Dancing Bee-Bots!

```
make a line of 4 turtles 90 apart  
set the shape to Bee-Bot  
set the speed to 0.8  
repeat 12  
times  
do  
  move the turtle forward random integer from 25 to 75  
  turn the turtle right random integer from 1 to 360 degrees
```

Activity Card #14: Turtles in the Round



Don't forget to send us block code that you have created!

To send us your code, use the Customer Contribution Form on our website.

<https://www.terrpinlogo.com/forms/share.html>

Under topic, please choose "I would like to share my Logo program."

We look forward to hearing from you!