

Logo Blocks Activities: Advanced Mode

These activities use the Advanced mode blocks in Logo Blocks as well as the ones in the Intermediate section.

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.terrapinlogo.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!



Advanced

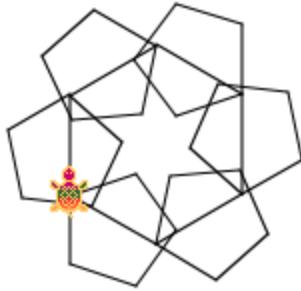
Logo Blocks Activity Card #1



Nested Repeats

You can make interesting designs by placing one *repeat* block inside another one.

Here is an example. Try some of your own!



How many *repeat* blocks can you nest?

Advanced

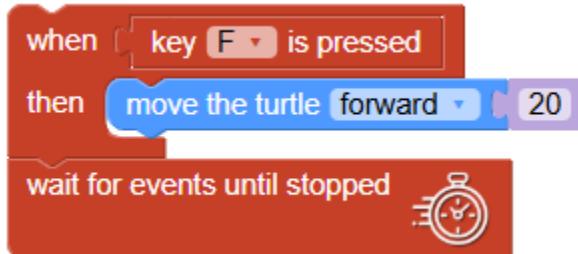
Logo Blocks Activity Card #2



Single Key Logo

Can you write a program that makes it easy for young children to move the turtle around the screen? They could just type letters.

Here's a start. What other keys can you add?
Be sure to add the *wait for events until stopped* block at the end.



Advanced

Logo Blocks Activity Card #3

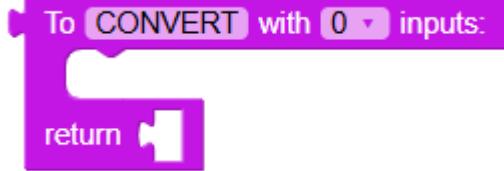
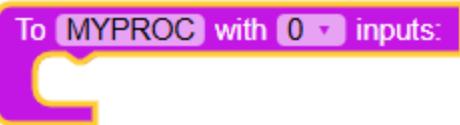


Convert Inches to Centimeters

Can you write a procedure that converts inches to centimeters?

One inch = 2.54 centimeters.

You can use the standard procedure block
or the one that gives you a result.



Advanced

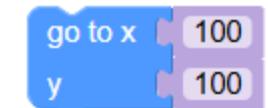
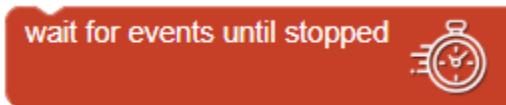
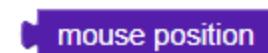
Logo Blocks Activity Card #4



Draw With the Mouse!

Can you write code that lets you draw when you drag the mouse?

You will need these blocks, among others:



The *mouse position* block reports a list of two numbers. That is why you need the *item* and *go to x y* blocks. Be sure to include the *wait for events until stopped* block at the end of your code.

Advanced

Logo Blocks Activity Card #5



Heads or Tails?

Write a program that flips a coin many times and tells you how many were Heads and how many were Tails.

Make variables called HEADS and TAILS.

Use the *random* block to choose either 1 or 2.

Use *If/Then/Else* to change the value of one or the other variable.

This block will come in handy.

change HEADS by 1

Don't forget to start the variables at 0!

Advanced

Logo Blocks Activity Card #6



Pick One!

Can you tell Logo Blocks to pick an item at random from a list?

The list could contain 3 items: the words Rock, Paper, and Scissors.

Or the list could be the names of people in a group.

You could use this program to pick a leader!

The code should:

1. set up a list
2. pick a random item from the list
3. display the result

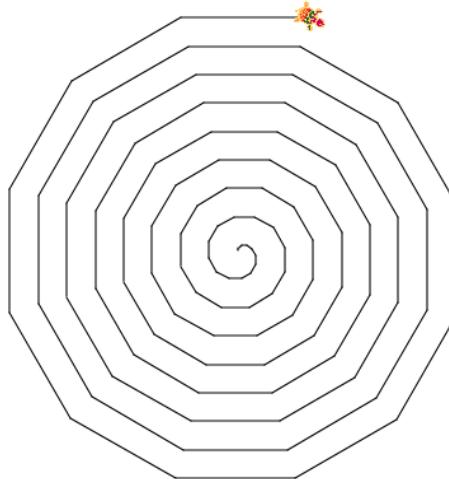
Advanced

Logo Blocks Activity Card #7



Create a Spiral

Can you write a program that results in something like this?



Tip: Create variables for DISTANCE and ANGLE.
Change their values to vary the design.

Advanced

Logo Blocks Activity Card #8



Make an Animal Alphabet

Write a program that names an animal for each letter you press.

Type any letter.

Stop **OK**

type: A

A is for Alligator

Stop

type: B

B is for Bobcat

Stop

How many animals can you come up with for this alphabet?

Advanced

Logo Blocks Activity Card #9



Create a Math Quiz

Can you code a quiz that does this?

- picks two numbers at random
- tells the player what the numbers are
- asks the player to enter what the two numbers add up to
- says whether their guess was the correct answer

You will need to use some variables for this project.
Use the *create variable...* button in the Variables section.

Then change it to practice multiplication tables.

This is a challenging project. Good luck with it!

Advanced

Logo Blocks Activity Card #10

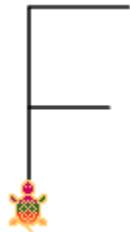


Resizable Letters

Pick a letter and create block code to draw it.

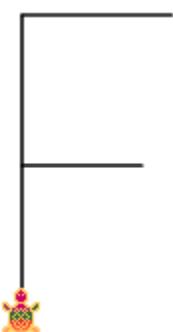
Then add variables so you can draw the letter in any size you want.

Here is an example using the letter F.



What letters can you make?

Some will be easier than others!



call LETTER_F with
SIZE 100

call LETTER_F with
SIZE 150

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Logo Blocks Activity Card #11

Count the Money

Can you write a program that asks you how many quarters, dimes, nickels, and pennies you have, and then tells you how much money that is?



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Logo Blocks Activity Card #12

Spelling Bee!

Can you code a spelling bee that does this?

- sets up a list of words (start with a small number for testing)
- picks a word at random
- speaks the word (use the *Say* block)
- asks the player to type the word they heard
- says whether they spelled the word correctly
- repeats the program (the same word might be chosen again)

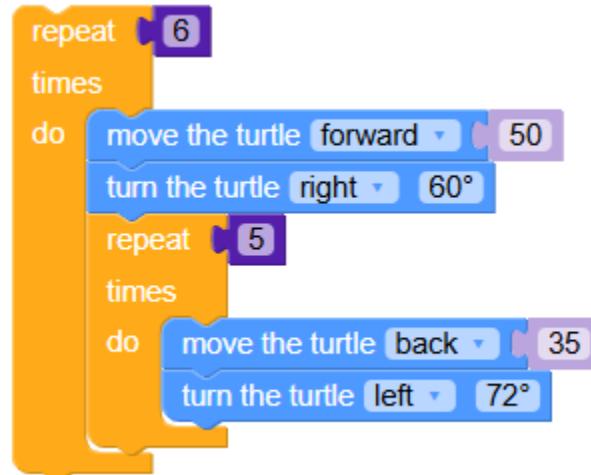
Good luck with this challenging program!
Perhaps work with another student on it.

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: Nested Repeats

Here is one example. Any solution that uses nested repeats is fine!



Activity Card #2: Single Key Logo

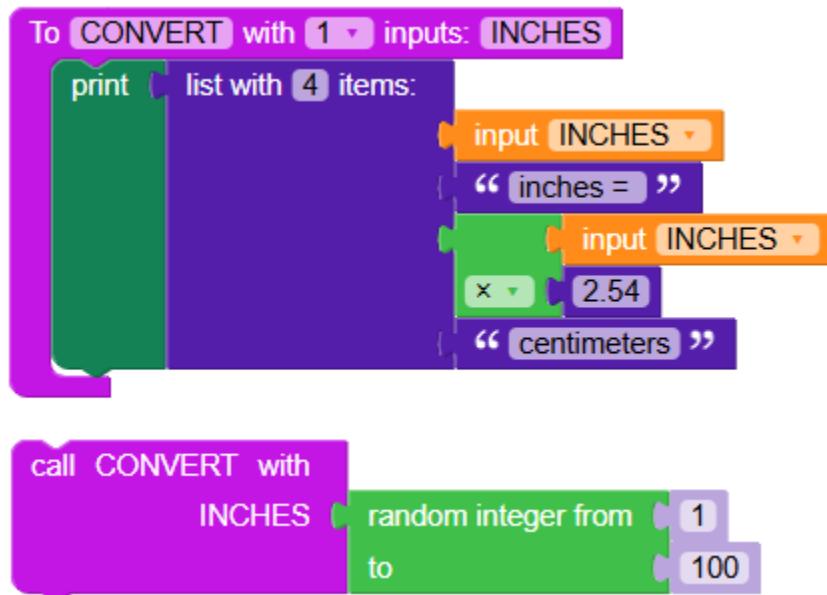
Here is a starter set of blocks.
You can continue to add to this program.



Activity Card #3: Convert Inches to Centimeters

Here are two solutions using different types of procedures.

Solution #1



To **CONVERT** with 1 inputs: **INCHES**

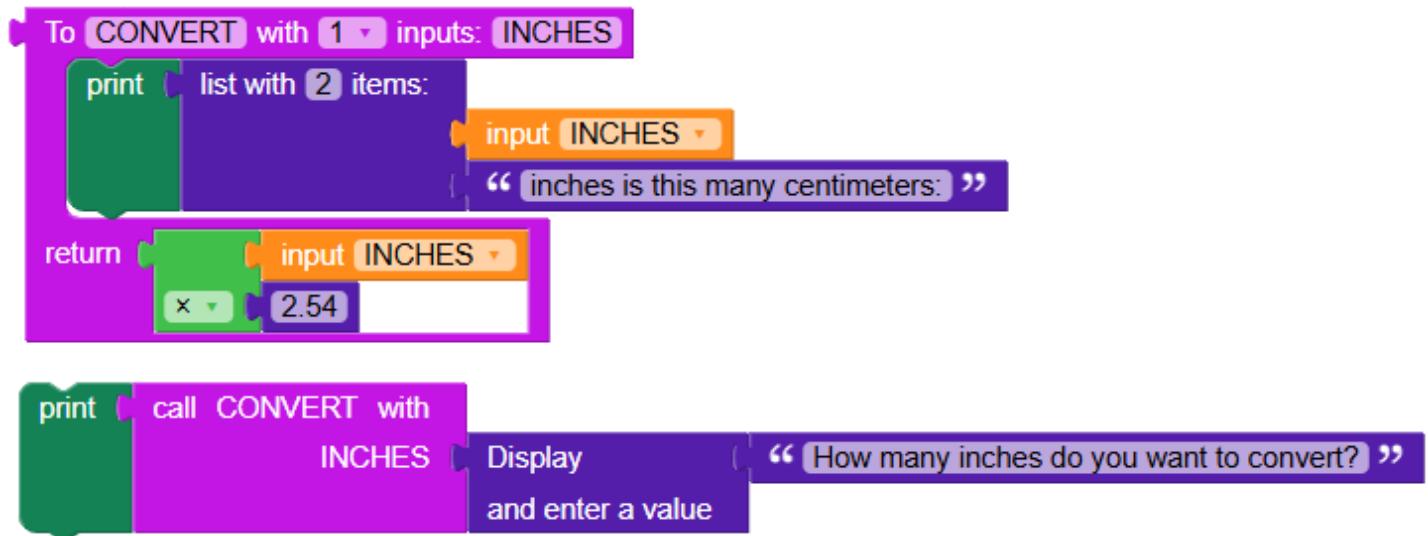
print list with 4 items:

- input **INCHES**
- “ inches = ”
- input **INCHES**
- \times 2.54

“ centimeters ”

call **CONVERT** with **INCHES** random integer from 1 to 100

Solution #2



To **CONVERT** with 1 inputs: **INCHES**

print list with 2 items:

- input **INCHES**
- “ inches is this many centimeters. ”

return \times 2.54

print call **CONVERT** with **INCHES** Display and enter a value “ How many inches do you want to convert? ”

Activity Card #4: Draw with the Mouse



when **mouse is dragged**

then **go to x** Item 1 of list **mouse position**
y Item 2 of list **mouse position**

wait for events until stopped

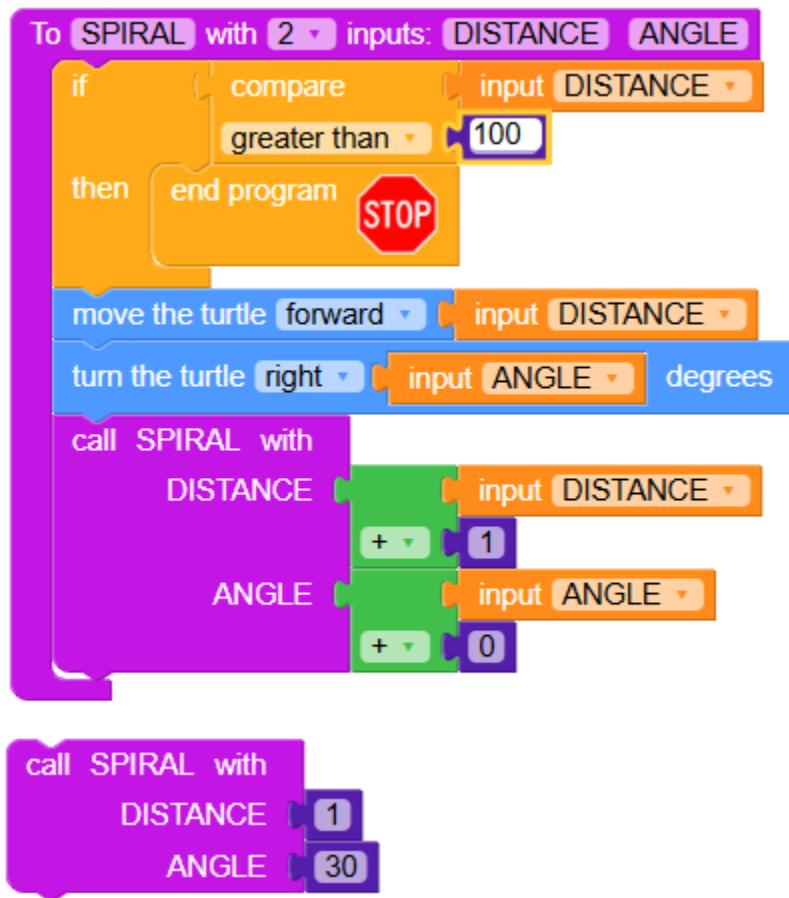
Activity Card #5: Heads or Tails?

```
set [HEADS v] to [0]
set [TAILS v] to [0]
repeat (100)
  do
    if (random integer from [1] to [2]) = [1]
      then change [HEADS v] by [1]
      else change [TAILS v] by [1]
    end
  end
  print [list with [4] items: "Heads = " [HEADS v], "Tails = " [TAILS v]]
```

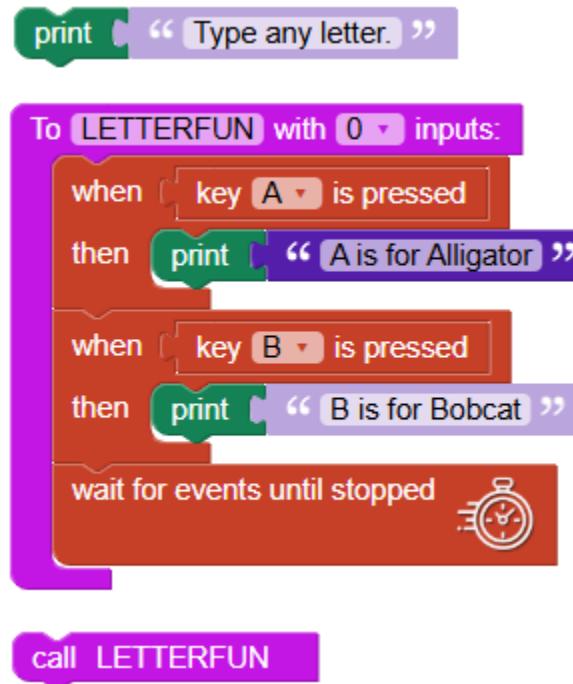
Activity Card #6: Pick One!

```
To [PICKONE v] with [0] inputs:
  set [LIST v] to [list with [3] items: "Rock", "Paper", "Scissors"]
  set [WINNER v] to [random integer from [1] to [3] of list [LIST v]]
  print [WINNER v]
call [PICKONE v]
```

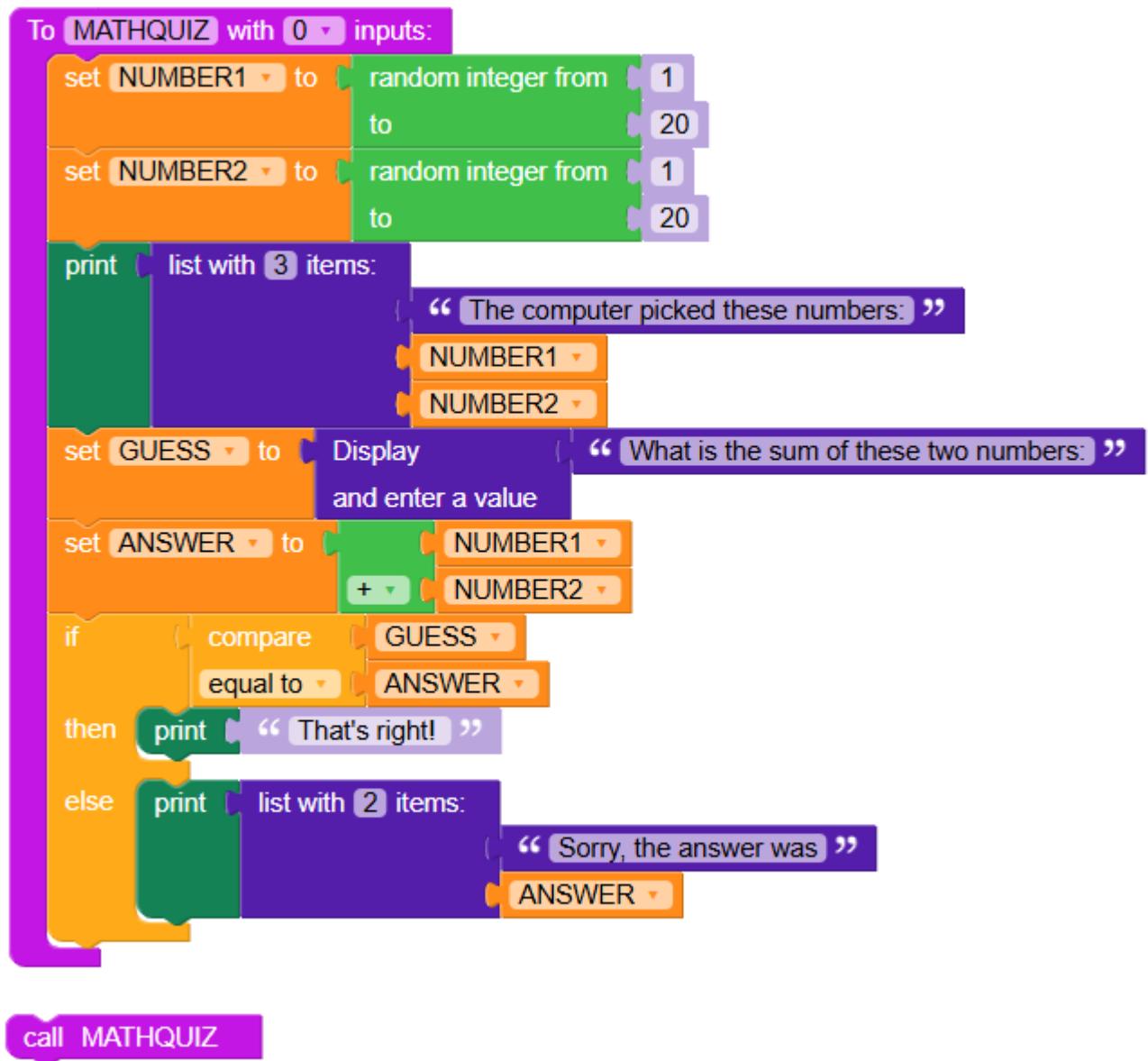
Activity Card #7: Create a Spiral



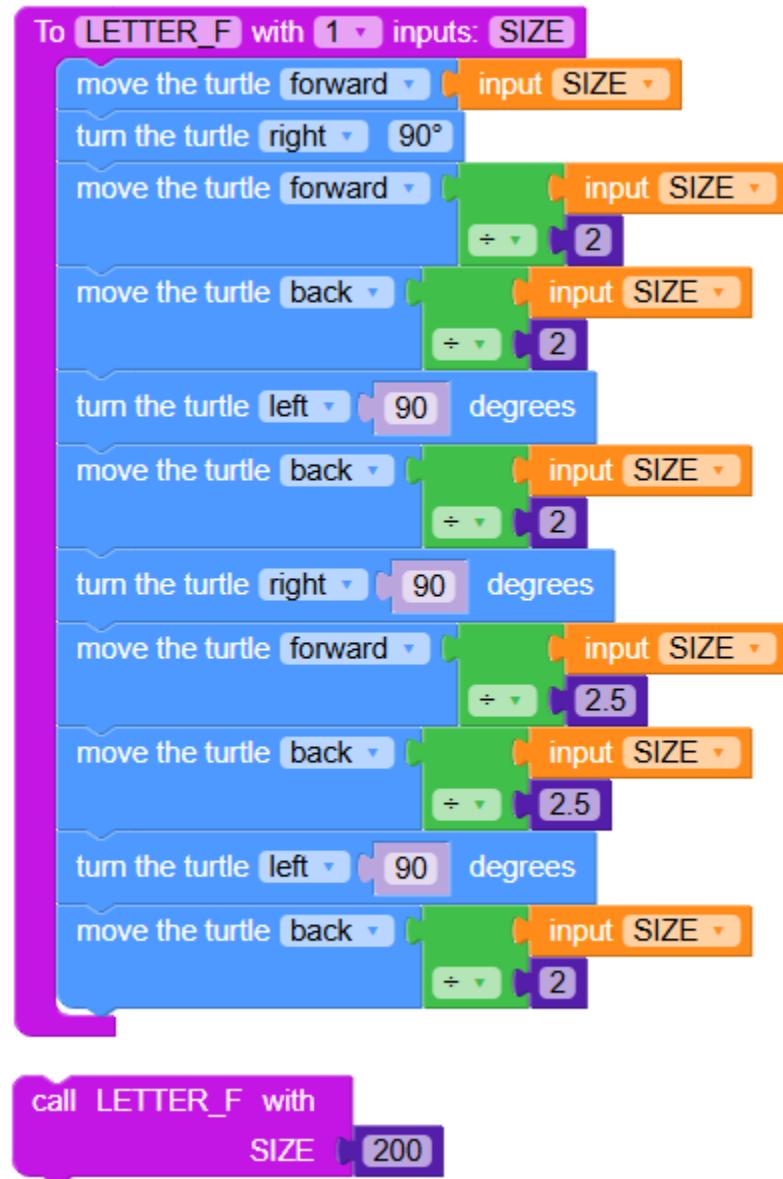
Activity Card #8: Make an Animal Alphabet



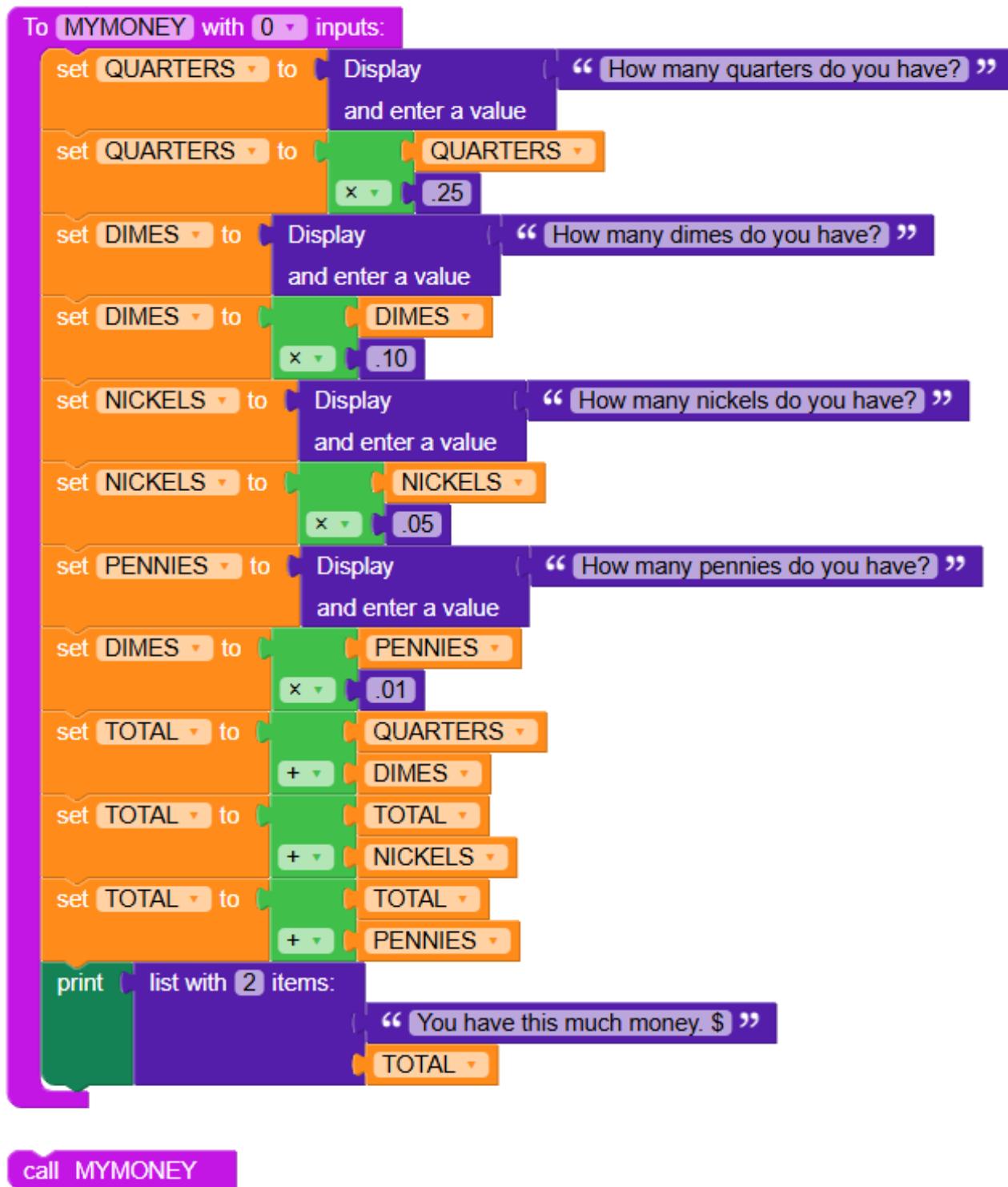
Activity Card #9: Create a Math Quiz



Activity Card #10: Resizable Letters



Activity Card #11: Count the Money



The Scratch script, titled "To MYMONEY with 0 inputs:", performs the following steps:

- Asks for the number of quarters and calculates their total value (0.25 each).
- Asks for the number of dimes and calculates their total value (0.10 each).
- Asks for the number of nickels and calculates their total value (0.05 each).
- Asks for the number of pennies and calculates their total value (0.01 each).
- Sums up the total values of quarters, dimes, nickels, and pennies to get the final total.
- Prints a message indicating the total amount of money.

```
To MYMONEY with 0 inputs:
  set [QUARTERS v] to [0]
  set [DIMES v] to [0]
  set [NICKELS v] to [0]
  set [PENNIES v] to [0]
  set [TOTAL v] to [0]
  say [How many quarters do you have? v]
  wait [1 sec]
  [QUARTERS v] = (ask [How many quarters do you have? v] and wait)
  [TOTAL v] = (TOTAL v) + (QUARTERS v) * (0.25)
  say [How many dimes do you have? v]
  wait [1 sec]
  [DIMES v] = (ask [How many dimes do you have? v] and wait)
  [TOTAL v] = (TOTAL v) + (DIMES v) * (0.10)
  say [How many nickels do you have? v]
  wait [1 sec]
  [NICKELS v] = (ask [How many nickels do you have? v] and wait)
  [TOTAL v] = (TOTAL v) + (NICKELS v) * (0.05)
  say [How many pennies do you have? v]
  wait [1 sec]
  [PENNIES v] = (ask [How many pennies do you have? v] and wait)
  [TOTAL v] = (TOTAL v) + (PENNIES v) * (0.01)
  say [You have this much money. $ v]
  wait [1 sec]
  print [list with 2 items: [TOTAL v] [TOTAL v]]
```

call MYMONEY

Below is a slightly more efficient way to code it:

To **MYMONEY** with 0 inputs:

```
set QUARTERS to [Display and enter a value] ["How many quarters do you have?"]  
set DIMES to [Display and enter a value] ["How many dimes do you have?"]  
set NICKELS to [Display and enter a value] ["How many nickels do you have?"]  
set PENNIES to [Display and enter a value] ["How many pennies do you have?"]  
set TOTAL to [QUARTERS * .25] + [DIMES * .10] + [NICKELS * .05] + [PENNIES * .01]  
print [list with 2 items: ["You have this much money. $"] TOTAL]
```

call **MYMONEY**

Activity Card #12: Spelling Bee!

To **SPELLINGBEE** with 0 inputs:

```
set SPELLINGWORDS to list with 5 items:
  "hello"
  "cat"
  "dog"
  "monkey"
  "elephant"
call BEE
```

To **BEE** with 0 inputs:

```
set THISWORD to Item random integer from 1 to 5 of list SPELLINGWORDS
print "Listen to this word and then spell it."
wait 1000 milliseconds
say THISWORD
set ANSWER to Display and enter a value
  "Type the word you heard."
if compare THISWORD
  equal to ANSWER
then print "Great! That's right. You spelled the word correct."
  call BEE
else print "Sorry. That spelling is not correct. Let's try again."
  call BEE
call SPELLINGBEE
```

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.terrapinlogo.com/forms/share.html>

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

We look forward to hearing from you!