

# DRAWING WITH VARIABLES

## PREDICT



Read the code and the code labels carefully with your partner

Write or draw in the box what you think the code does

Assigns 50 to **distance** variable (Initialisation)

Move **distance** variable steps

Subtract 2 from **distance** variable

```
when this sprite clicked
  pen down
  set distance to 50
  repeat 10
    move distance steps
    change distance by -2
    turn 90 degrees
```

I predict this code will

When it is run

Assigns 0 **number\_of\_sides** variable (Initialisation)

Asks the users to type in a number and then assigns that number to **number\_of\_sides** variable

Loop **number\_of\_sides**

Divide 360 by **number\_of\_sides** and turn that amount of degrees

```
when this sprite clicked
  set number_of_sides to 0
  pen down
  ask Type in the number of sides as a number only and wait
  set number_of_sides to answer
  repeat number_of_sides
    move 30 steps
    turn 360 / number_of_sides degrees
```

I predict this code will

When it is run

Now mark your work using the predict marksheet

## DRAWING WITH VARIABLES

### INVESTIGATE



Work with a partner. Open Scratch and load Drawing with variables

Run the program as many times as you want. Work with a partner to answer these questions.

#### Look inside the Drawing sprite



1, How many lines of code are initialisation? HINT Initialisation code clears away the effects of running the code before so it can run the same way again

2, Finish the pattern to list all the values of the distance variable while the program is running

50, 48, \_ , \_ , \_ , \_ , \_ , \_ , \_ , \_

3, How many times is the turn 90 degrees block run?

4, Which line of code takes away 2 from the distance variable every time it goes through a loop?

#### Look inside the Shapes sprite



5, Once a number has been typed into an ask block, where does that answer go next?

HINT Answer is in the question (circle the right answer)

A, answer block    B, number\_of\_sides variable    C, Nowhere

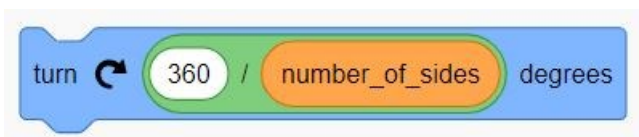
6, Once a number value is in the answer bloc where is it transferred to next? (circle the right answer)

A, answer block    B, number\_of\_sides variable    C, Nowhere

7, Complete the table

Users number	Repeats	Number of sides
3		3
7	7	
10		

8, What maths does this block do? (Add, subtract, multiply, divide)



Now mark your work using the investigate marksheet

## DRAWING WITH VARIABLES

### CHANGE

Work with a partner. Open Scratch and load

Drawing with variables



Work with a partner  
of same ability

Make changes to the code to answer these questions



Make changes to Drawing

1, What three things can you do to make the program run faster?

A, B, C,

2, Change the code so that 50 lines are drawn. What did you change?

3, If the variable becomes a negative number what does the sprite do?

4, Change the code so that the lines starts at 100 steps before getting shorter. What did you change?

5, Change the code so that it draws a different shape pattern. What did you change?



Make changes to Shapes

6, Change the code so that shapes are drawn with another colour. What did you change?

7, Change the code so that all shapes drawn are larger. What did you change?

Now mark your work using the change marksheet



# DRAWING WITH VARIABLES

## CREATE



Work within Drawing with Variables to complete tasks 1 and 2

### Task 1 Shapes

Create a new variable called length\_of\_side. Create code so that the user can input how long they want the shape side to be using a new ask and answer block.

### Task 2 Shapes

Create a new variable called penSize. Create code so that the user can input how thick they want the shape lines to be using a new ask and answer block. HINT Set pen size to

Now work outside Drawing with variables to complete task 3

### Task 3

Plan and make a program that starts with a large shape and then draws smaller and smaller shapes each time. Use variables to help you



Objects (sprites and back-grounds)	Algorithm Plan
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### Teacher and Pupil Assessment

Circle one column on each row to show what you think you have achieved



	Not used a variable in my program	copied a variables idea exactly	Adapted a variable idea	Used variables in a way not shown in the example program
Variables	0 Marks	1 mark	2 marks	3 marks
			Not used previous programming concepts for real purpose	Used previous programming concepts for real purpose
Used previous programming concept such as loops correctly			0 Marks	1 mark