

## Wokingham Library Online Code Club – 5 September 2020

During this session we started a new Scratch project called Pen Pattern, which was intended to be the first of two sessions. We didn't manage to complete everything that I had planned, therefore the additional steps are included in this document.

Before the next session on Saturday 19<sup>th</sup> September it will be useful if you can complete the steps listed below and have your list of variable values ready for the next session. (see step 3 below)

In case you're having problems with your script this link shows the code and will allow you to complete step 3:

<https://scratch.mit.edu/projects/422922042/editor/>

### 1. Modify the code

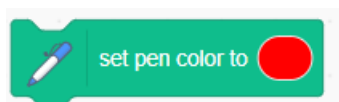
- a. Add the following code blocks to use the **pen colour change** variable that we created. (See the page 4 of this document for screen shot showing the complete script and where to position these blocks.)



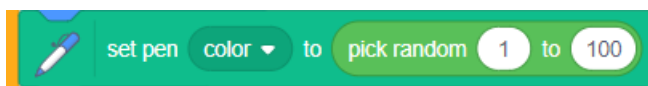
The **pen colour change** variable has the range 0 – 10. The effect of these blocks is to code the following logic:

pen colour change	effect on the pattern that's drawn
0	pen colour won't change
1 - 9	pen colour will change uniformly
10	pen colour will change randomly

- b. Change the following block:



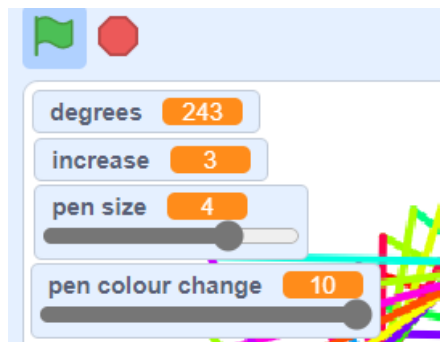
to:



This will allow the program to start with a different random colour for each pattern it draws.

## 2. Script variables

Check that you have the following four variables showing in the script:

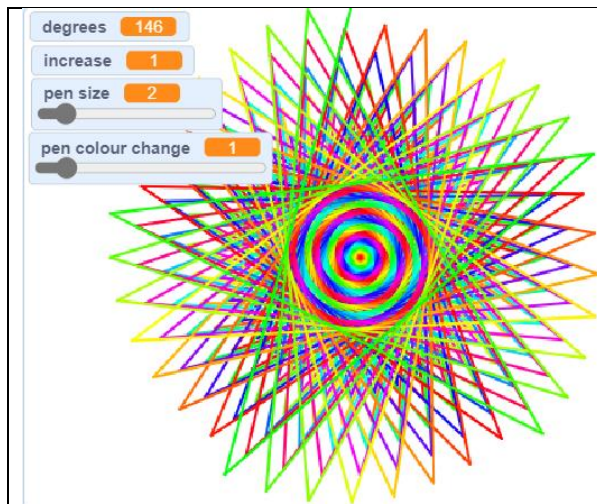


**pen size** and **pen colour change** can be manually updated using the slider controls;  
**degrees** and **increase** are randomly chosen by the program.

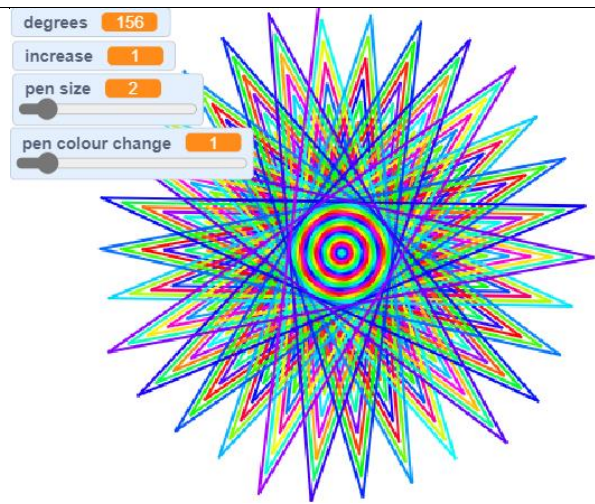
## 3. Run the program and note the values of variables

- Click the green flag to run the program to show a pattern;
- Click the left mouse button to show another pattern;
- Change the values of the **pen size** and **pen colour change** variables using the slider controls and re-run the program to see how the patterns change;
- Some of the patterns will be a bit boring, for example those shown in Examples 9 & 10 on page 4. Others will be more interesting, for example those shown in Examples 1 – 8 on pages 3 and 4;
- Make a note of the four variable values for the patterns that you like. You could do this on paper or in a program such as Excel. The following table shows the values for the Examples that are shown on the following page. You can save as few or as many as you like. Bring your list to the next Scratch session when we will add the values to lists to allow the program to continuously generate the chosen patterns.

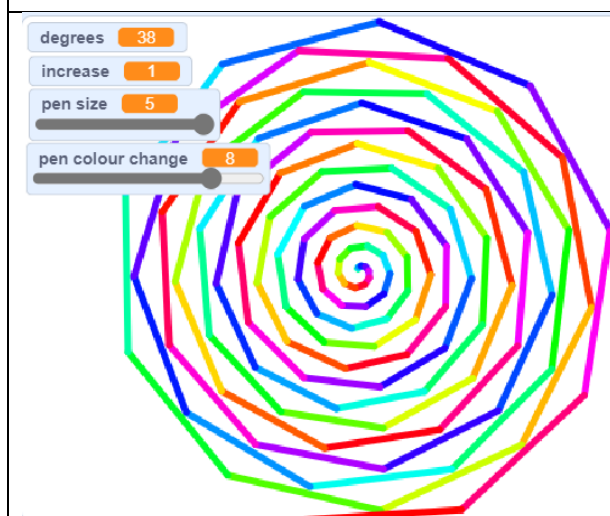
	Random - chosen by program		Sliders - chosen by me	
	degrees	increase	pen size	pen colour change
Example 1	145	1	2	1
Example 2	156	1	2	1
Example 3	38	1	5	8
Example 4	267	4	3	4
Example 5	272	1	2	0
Example 6	103	1	2	0
Example 7	335	1	3	10
Example 8	173	5	4	1



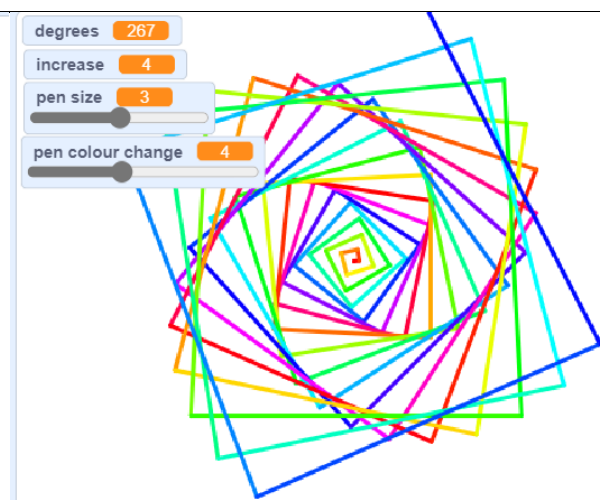
Example 1



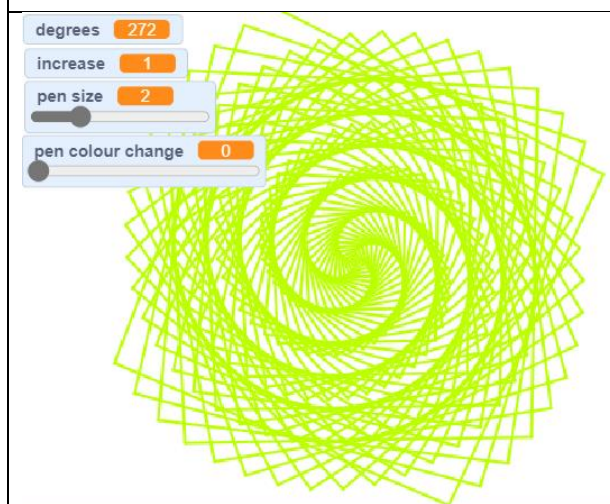
Example 2



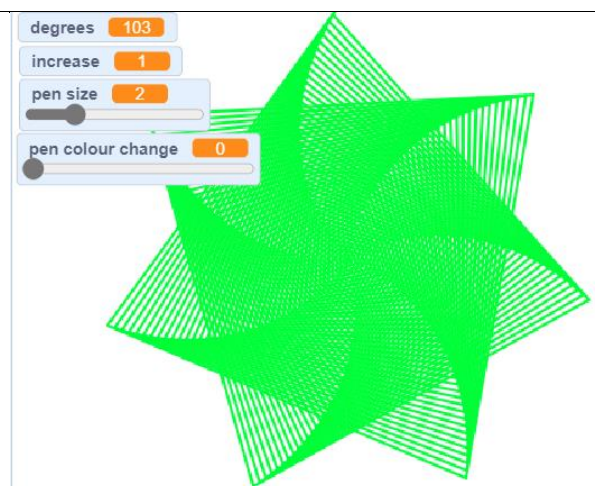
Example 3




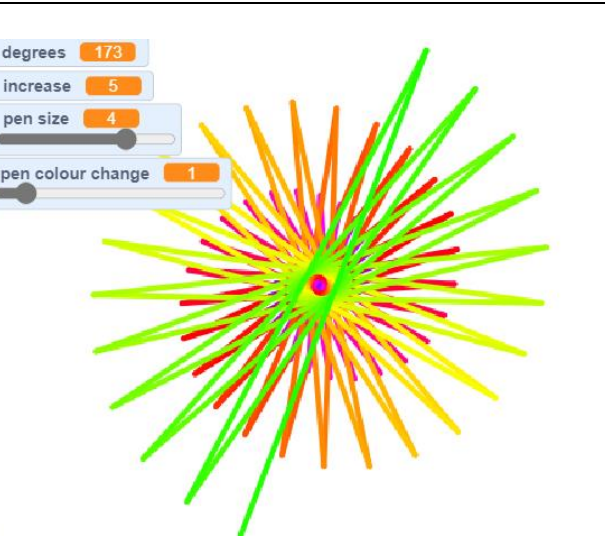
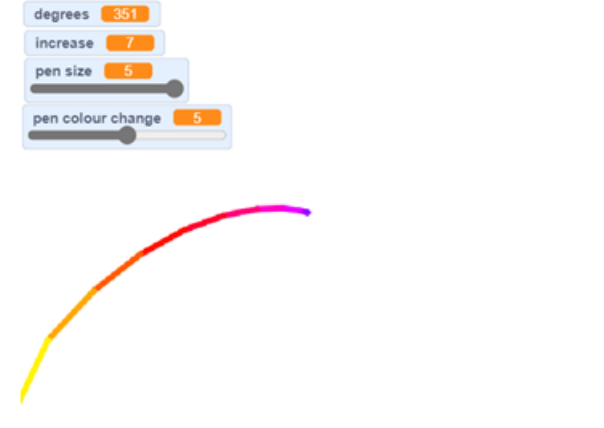
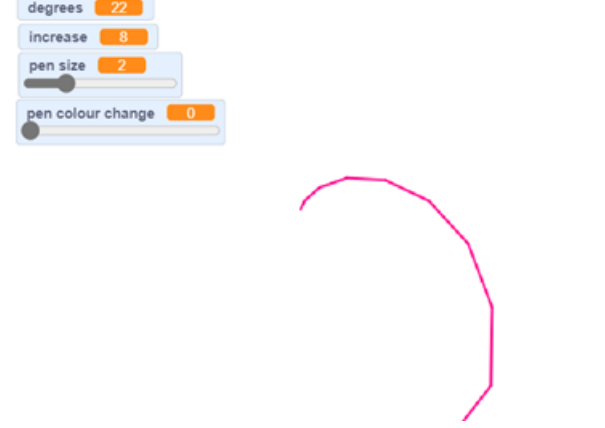
Example 4

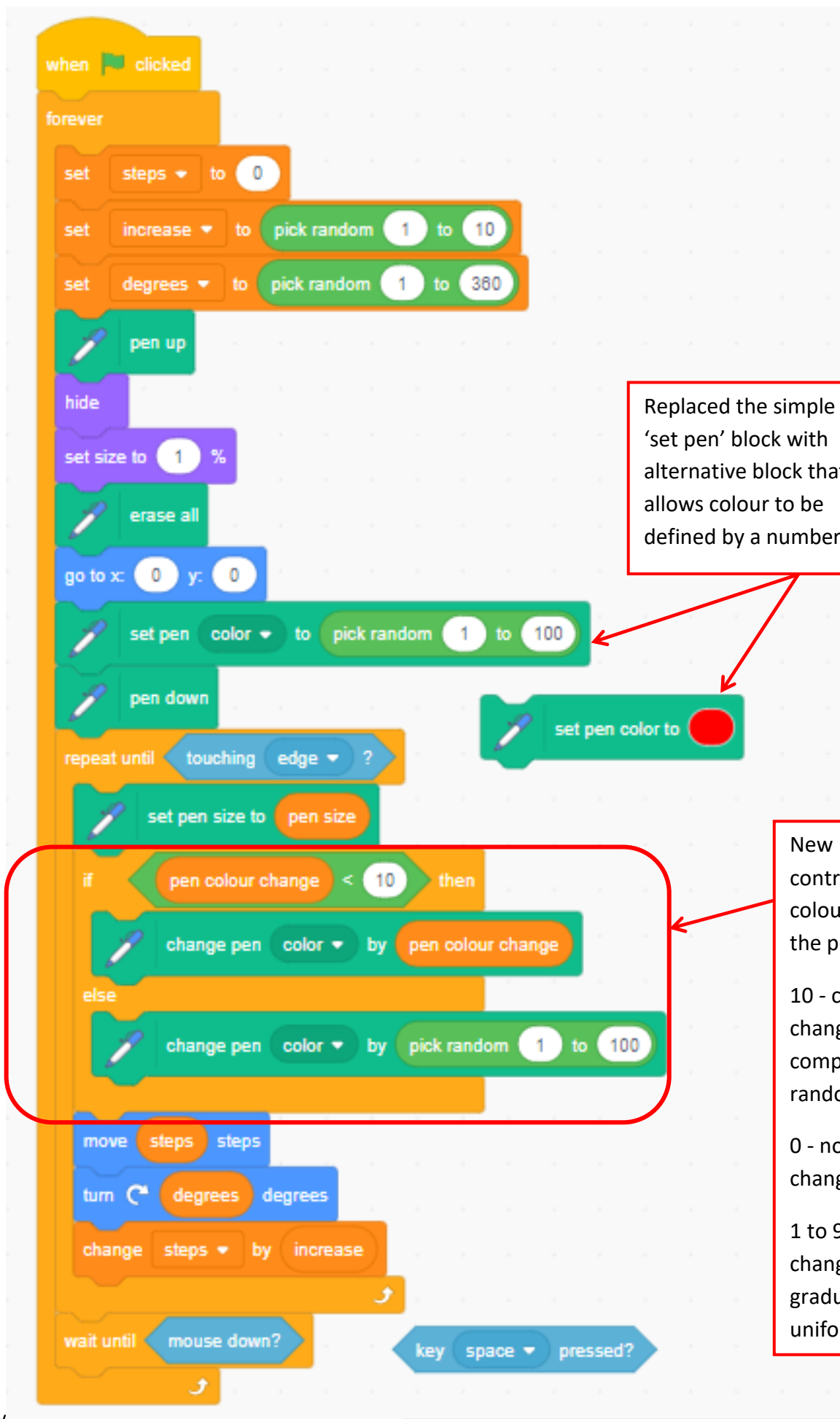


Example 5



Example 6

 <p>degrees 335 increase 1 pen size 3 pen colour change 10</p> <p>Example 7</p>	 <p>degrees 173 increase 5 pen size 4 pen colour change 1</p> <p>Example 8</p>
 <p>degrees 351 increase 7 pen size 5 pen colour change 5</p> <p>Example 9</p>	 <p>degrees 22 increase 8 pen size 2 pen colour change 0</p> <p>Example 10</p>



Replaced the simple 'set pen' block with alternative block that allows colour to be defined by a number.

New blocks to control the colour change of the pen.

10 - colour change completely random.

0 - no colour change.

1 to 9 - colour change will be gradual & uniform.