DIGITAL TECHNOLOGIES

Activity Book

Name: _____

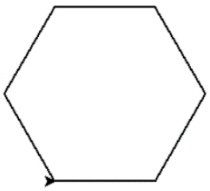
SECTION 1 - TUTORIALS TO COMPLETE

Complete Tutorials 1, 2 and 3.

- Tutorial 1 – Triangle
- Tutorial 2 – Square
- Tutorial 3 - Pentagon

Once you have successfully completed these tutorials, show your teacher and get them signed off on your checklist. You then need to work through the activities below.

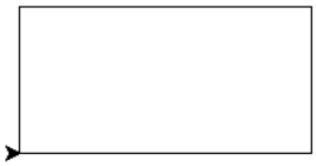
SECTION 1 - ACTIVITIES TO COMPLETE



1. Write a program that will draw a hexagon in both Scratch and in Python. Each side needs to be 100 steps in length. You must use a loop to complete this code successfully.

Save this program into your Activity Code folder as:

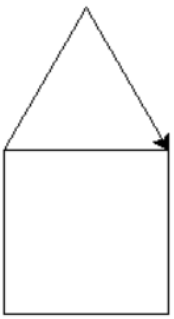
- *1_hexagon.sb3*
- *1_hexagon.py*



2. Write a program that will draw a rectangle in both Scratch and in Python. The longer sides should be 200 steps in size. The shorter sides need to be 100 steps.

Save this program into your Activity Code folder as:

- *2_rectangle.sb3*
- *2_rectangle.py*



3. Write a program that will draw a simple house in both Scratch and in Python. All sides of the house and roof need to be 100 steps long. When drawing the house, try and do it so that the house is drawn with one single line – meaning, you should not draw over any existing lines.

Save this program into your Activity Code folder as:

- *3_house.sb3*
- *3_house.py*

Once you have successfully completed these activities, show your teacher and get them signed off on your checklist.

SECTION 2 - TUTORIALS TO COMPLETE

Complete Tutorials 4, 5 and 6.

- Tutorial 4 – Outline Colours
- Tutorial 5 – Circles and Fill Colours
- Tutorial 6 - Stars

Once you have successfully completed these tutorials, show your teacher and get them signed off on your checklist. You then need to work through the activities below.

SECTION 2 - ACTIVITIES TO COMPLETE

4. Create a red heartbeat pattern that you would see on a heartbeat monitor. It will have 3 pulses that:

- Moves 20 steps forward before the start of the pulse;
- Turns 80° left to draw the start of the pulse;
- Moves 20 steps up to draw the start of the pulse;
- Turns 160° right at the top of the pulse;
- Moves 40 steps to draw the main part of the pulse;
- Turns 160° left at the bottom of the pulse;
- Moves another 20 steps to draw the last part of the pulse;
- Has a gap of 40 steps between each pulse

Save this program into your Activity Code folder as 4_heartbeat.py

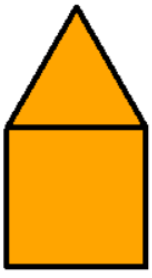
5. Write a program that will recreate the coloured pattern in the image on the right. You will need to use any 2 colours and a line thickness of 10. It might seem tricky, but once you work out the pattern, it is quite easy! You will also need to put in a black background.

Save this program into your Activity Code folder as 5_square_pattern.py

6. Write a program that will draw your name on the screen using only lines. Each letter in your name needs to be a different colour and a different thickness to the other letters in your name. Feel free to use a nickname or your last name if it makes things easier.

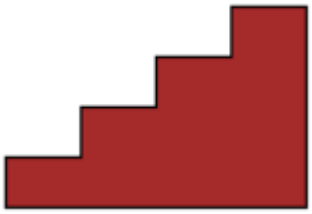
Save this program into your Activity Code folder as 6_name.py

7. In Activity 3, you drew a simple house. All sides of the house and roof were 100 steps in length. You are to write the code to recreate this exact house, except this time, you are to colour it in. It must have a black outline with a fill colour of your own choosing.



Save this program into your Activity Code folder as 7_coloured_house.py

8. Write a program that will draw a staircase of 4 steps. They must be 20 turtle steps high and 30 turtle steps wide. The staircase will go up and to the right of the screen. The staircase will have a black outline and a brown fill colour, as shown in the example on the right.



Save this program into your Activity Code folder as 8_staircase.py

Once you have successfully completed these activities, show your teacher and get them signed off on your checklist.

SECTION 3 - TUTORIALS TO COMPLETE

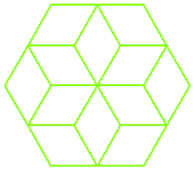
Complete Tutorials 7 and 8.

- Tutorial 7 – Cool Octagon Pattern
- Tutorial 8 – Square Spirograph

Once you have successfully completed these tutorials, show your teacher and get them signed off on your checklist. You then need to work through the activities below.

SECTION 3 - ACTIVITIES TO COMPLETE

9. Using inspiration from the pattern examples below, create your own pattern using a loop. Be sure to change the outline thickness and the colour. This will take some trial and error to get it looking good. Try a variety of shapes and angles.



Save this program into your Activity Code folder as 9_pattern.py

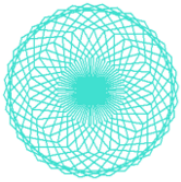
```
color("gold")
pensize(3)

for i in range(10):
    forward(150)
    right(108)
```



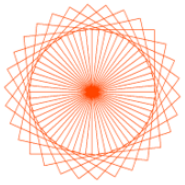
```
color("turquoise")
pensize(2)

for i in range(36):
    right(10)
    for i in range(8):
        forward(50)
        right(45)
```



```
color("orangered")
pensize(2)

for i in range(35):
    left(12)
    for i in range(4):
        forward(200)
        left(90)
```



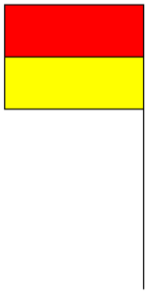
SECTION 4 - TUTORIALS TO COMPLETE

Complete Tutorials 9, 10 and 11

- Tutorial 9 – Aboriginal Flag
- Tutorial 10 – Factory
- Tutorial 11 - Building

Once you have successfully completed these tutorials, show your teacher and get them signed off on your checklist. You then need to work through the activities below.

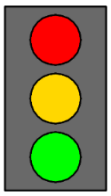
SECTION 4 - ACTIVITIES TO COMPLETE



10. Write a program that will draw the red and yellow lifesaving flag. The flag is made up of the following features:

- a flagpole that is 200 steps high
- a red rectangle on top that is 120 steps long and 45 steps high
- a yellow rectangle on the bottom that is 120 steps long and 45 steps high

Save this program into your Activity Code folder as 10_lifesaver.py

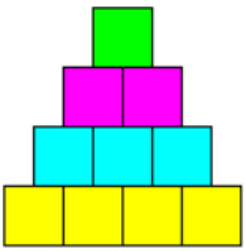


11. Write a program that will draw a set of traffic lights. This graphic will be made up of a rectangular body with 3 circular lights on top of it. Use a black outline for all shapes. Draw the grey body part first.

Save this program into your Activity Code folder as 11_traffic_lights.py

12. Write a program that will draw a colourful pyramid that is 4-storeys high. Each square block that you see in the pyramid has sides of 30 steps. You will need to use a loop to draw each row, as well as another loop to draw each square. You will need to be specific with your coordinates as well, so that your pyramid looks symmetrical. Use the colours of yellow, cyan, magenta and lime.

Save this program into your Activity Code folder as 12_pyramid.py



SECTION 5 - TUTORIAL TO COMPLETE

Complete Tutorial 12 – Asking Questions

Once you have successfully completed this tutorial, show your teacher and get it signed off on your checklist. You then need to work through the activities below.

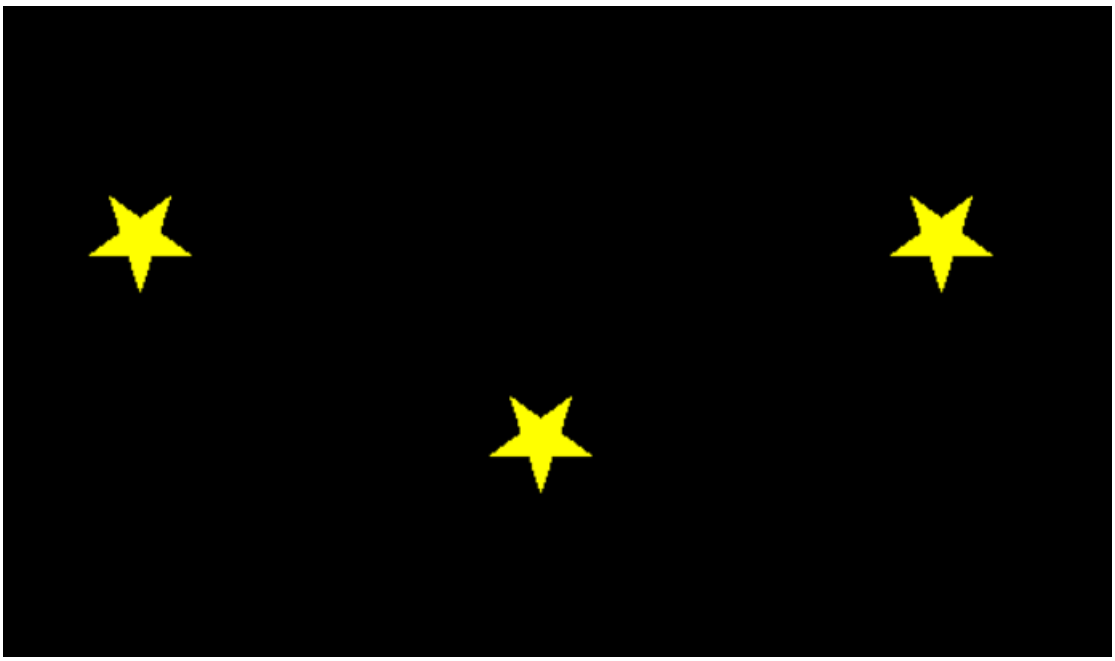
SECTION 5 - ACTIVITIES TO COMPLETE

13. Write a program that will draw 3 stars in the night sky. The program will begin by asking the user 2 questions:

- What colour they want the sky to be?
- What colour they want the stars to be?

Save this program into your Activity Code folder as 13_night_sky.py

```
What colour do you want the sky to be: black
What colour do you want the stars: yellow
```



SECTION 6 - TUTORIALS TO COMPLETE

Complete Tutorials 13 and 14.

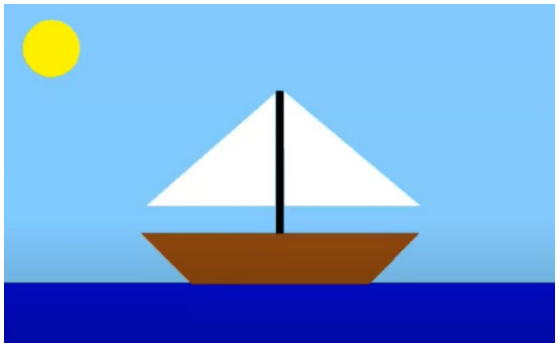
- Tutorial 13 - House
- Tutorial 14 – Mountain Range

Once you have successfully completed these tutorials, show your teacher and get them signed off on your checklist. You then need to work through the activities below.

SECTION 6 - ACTIVITIES TO COMPLETE

14. Write a program that will draw a simple sailboat. At the very least, it should include a mast, sail, hull and some background elements, such as the sky and water. Your screen size must be 800 wide by 500 high.

Save this program into your Activity Code folder as 14_boat.py



CONGRATULATIONS!

You have now completed all of the Tutorials and Activities in this workbook. Make sure you have had your checklist fully signed off by your teacher. It is now time for you to start your assessment task.

CHECKLIST NAME: _____ CLASS: _____

As you complete each of the tutorials and activities, you must show your teacher so that they can sign you off to say that you have successfully completed that task.

Tutorial	Due	Teacher Signature	Activity	Due	Teacher Signature
1. Triangle	Wk 1		1. Hexagon – Scratch & Python	Wk 1	
2. Square	Wk 1		2. Rectangle – Scratch & Python	Wk 1	
3. Pentagon	Wk 1		3. House – Scratch & Python	Wk 1	
4. Outline Colours	Wk 1		4. Heartbeat	Wk 2	
5. Circles and Fill Colours	Wk 1		5. Square Pattern	Wk 2	
6. Stars	Wk 2		6. Name	Wk 2	
7. Cool Octagon Pattern	Wk 2		7. Coloured House	Wk 2	
8. Square Spirograph	Wk 2		8. Staircase	Wk 3	
9. Aboriginal Flag	Wk 3		9. Pattern	Wk 3	
10. Factory	Wk 3		10. Lifesaver Flag	Wk 3	
11. Building	Wk 3		11. Traffic Lights	Wk 3	
12. Asking Questions	Wk 4		12. Pyramid	Wk 4	
13. House	Wk 5		13. Night Sky	Wk 4	
14. Mountain Range	Wk 5		14. Boat	Wk 5	