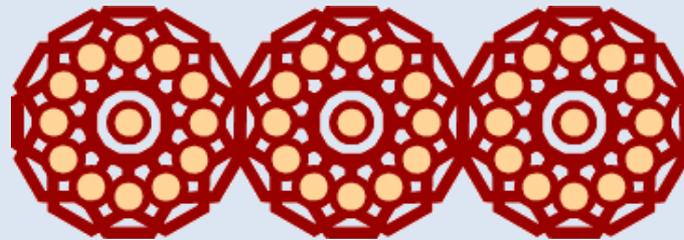


# TILING PATTERNS

## MODULE 1: INVESTIGATION 4

### Defining your own Pattern Blocks





### ACTIVITY 1.4.1

# Defining your own Block

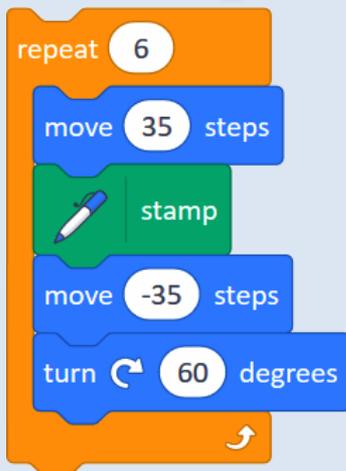


Continue in your project **14-Rose Patterns**.

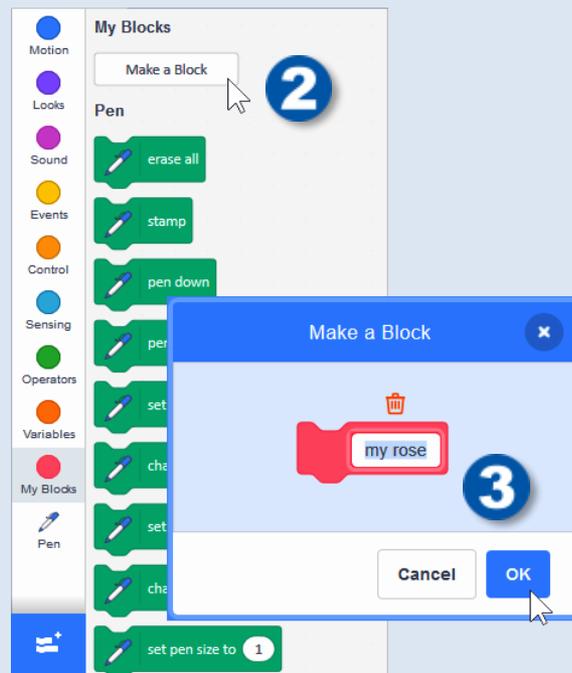
- Build a script of a rose pattern using the algorithm **move-stamp-move back-turn** and define a new block to stamp this pattern – *give your script a name*.



1



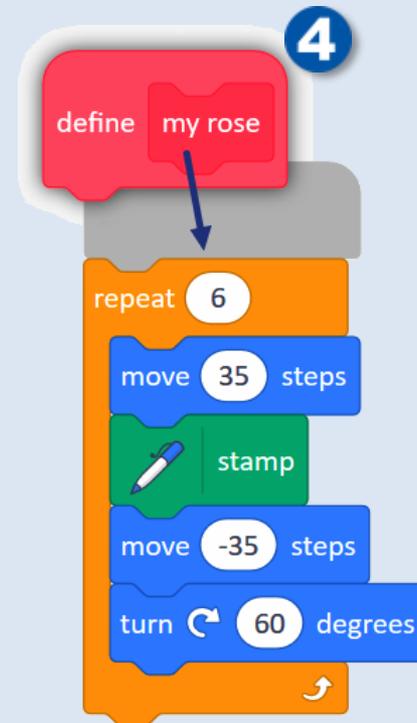
A Scratch script starting with a 'repeat' block set to 6. Inside the repeat block are four blocks: 'move 35 steps', 'stamp', 'move -35 steps', and 'turn 60 degrees'.



The 'My Blocks' palette is shown with the 'Make a Block' button highlighted. A 'Make a Block' dialog box is open, showing a red block named 'my rose' with a trash icon. The 'OK' button is highlighted.

2

3



The Scratch script is shown with a 'define my rose' block added above the 'repeat' block. An arrow points from the 'define my rose' block to the 'stamp' block in the script.

4

5

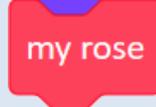
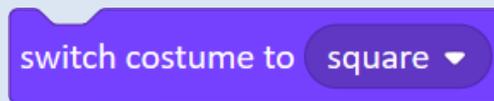


# MODULE 1: INVESTIGATION 4

## Activity 1.4.1 – Defining your own Block



- Drag your new block **my rose** into the scripts area and click it.
- Drag the Tile somewhere else on the stage and click the block again.
- Build different scripts using your new block, one or more times.

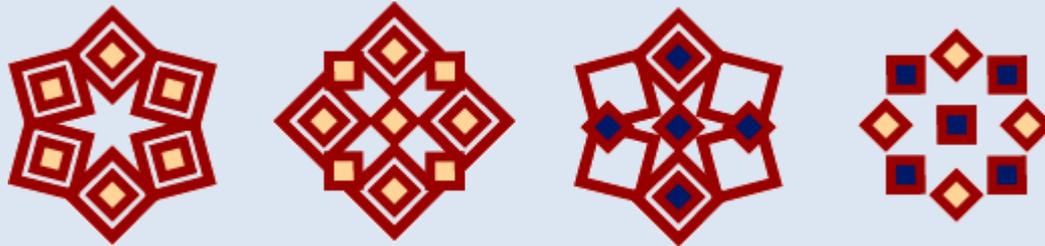


## MODULE 1: INVESTIGATION 4

### Activity 1.4.1 – [Extension] Defining your own Block



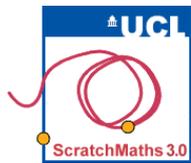
- **[Extension]** Change the definition of your new block or create another new block to create different rose patterns.





### Discussion Questions

- Why do you think it is useful to define your own blocks?
- Why might it be important to give your new block a meaningful name?



## **MODULE 1: INVESTIGATION 4**

### **Activity 1.4.2 – Unplugged: Reading Scripts**



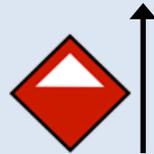
#### **ACTIVITY 1.4.2: UNPLUGGED**

# **Reading Scripts**



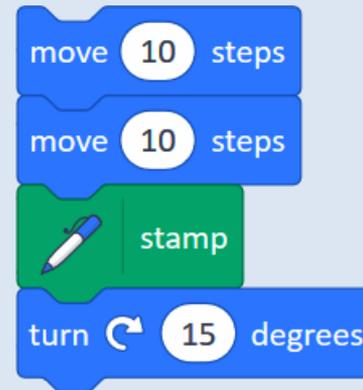
Read each script and think about what would happen on the stage when it is clicked.

1 How **many steps** will my Tile sprite move in total when I click on the script below?



Total number of steps moved =

2 How could I make this script **simpler** and still have the same outcome?



Write simpler version of script below:

# MODULE 1: INVESTIGATION 4

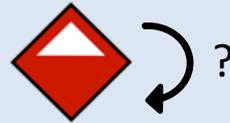
## Activity 1.4.2 – Unplugged: Reading Scripts



- 3 How many degrees will my Tile sprite turn in total when I click on the script below?

```

turn 60 degrees
stamp
turn 60 degrees
stamp
turn 60 degrees
stamp
  
```



Total number of degrees turned =

- 4 Write a script that has the same outcome as the script below but without using the **repeat** block.

```

point in direction 90
repeat 3
  move 20 steps
  stamp
  
```

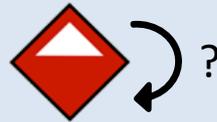
Write a script with same outcome without **repeat** below:

# MODULE 1: INVESTIGATION 4

## Activity 1.4.2 – Unplugged: Reading Scripts



5 How many degrees will the Tile sprite turn in total when I click on the script below?



```

repeat 4
  stamp
  turn 30 degrees
  
```

Total number of degrees turned =

6 What is the lowest number that could go into the repeat block to create the pattern on the right?



```

repeat ?
  move 30 steps
  stamp
  move -30 steps
  turn 60 degrees
  
```

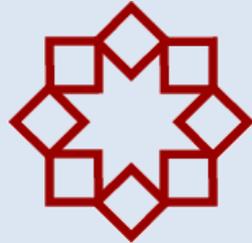
Repeat number =

# MODULE 1: INVESTIGATION 4

## Activity 1.4.2 – Unplugged: Reading Scripts



7 Which **number** do I need to put into the **turn** block to create the pattern below?



```

repeat 8
  move 50 steps
  stamp
  move -50 steps
  turn ? degrees
  
```

Number of degrees =

8 Make the script below **shorter** by using the **repeat** block.

```

move 10 steps
stamp
move 10 steps
stamp
move 10 steps
stamp
move 10 steps
stamp
  
```

Write the shorter script using the **repeat** block below:

# MODULE 1: INVESTIGATION 4

## Activity 1.4.2 – Unplugged: Reading Scripts



9 How many times will the Tile sprite stamp if I click on the script below?

```

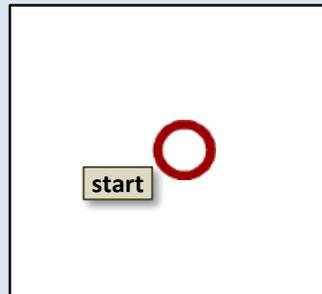
repeat 8
  move 50 steps
  stamp
  move 20 steps
  stamp
  move -70 steps
  turn 45 degrees
  
```

Number of tiles stamped =

10 [Extension] In the boxes on the right draw the pattern that will be stamped by the Tile sprite when each of the scripts on the right are clicked on.

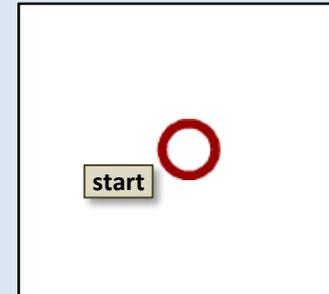
```

repeat 8
  move 50 steps
  stamp
  move -50 steps
  turn 45 degrees
  
```



```

repeat 10
  move 50 steps
  stamp
  move -50 steps
  turn 45 degrees
  
```



## MODULE 1: INVESTIGATION 4

### Activity 1.4.3 – [Extension] Building a Row of Roses



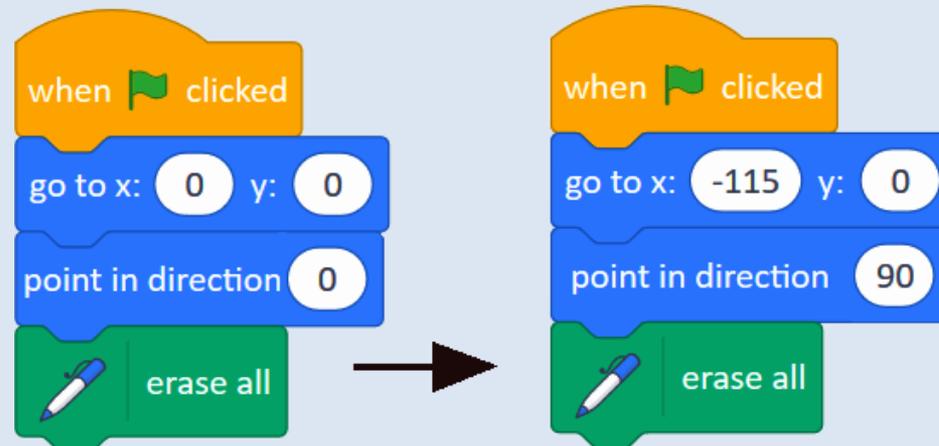
#### ACTIVITY 1.4.3 [EXTENSION]

# Building a Row of Roses



Continue in your project **14-Rose Patterns**.

- Edit the setup script so that the Tile starting position is closer to the left edge of the stage and is pointing to the right.

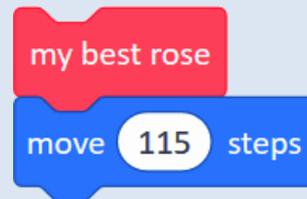


## MODULE 1: INVESTIGATION 4

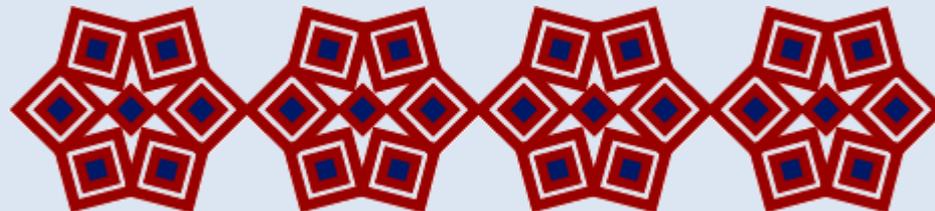
### Activity 1.4.3 – [Extension] Building a Row of Roses



- Choose one of your roses, define a block for it and build a small script using your **rose** block and **move 115 steps** (for example).



- Add a **repeat** block around this script.





## Discussion Questions

- Could you plan a strategy for a pattern with four repeated roses?
- How about six roses in two rows of three?
- How could you find out the exact coordinates (i.e. x position and y position) for the starting point of each of your rose patterns?

## MODULE 1: INVESTIGATION 4

### Activity 1.4.4 – [Extension] Rose of Roses



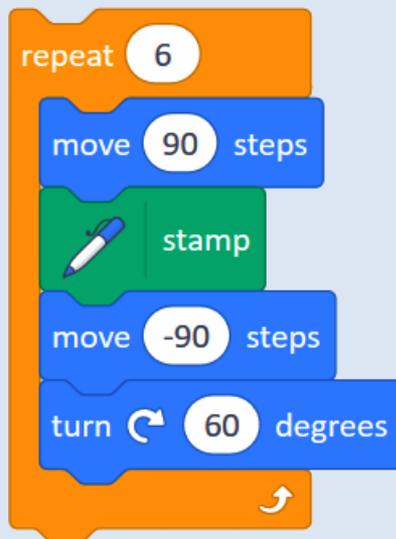
#### ACTIVITY 1.4.4 [EXTENSION]

# Rose of Roses

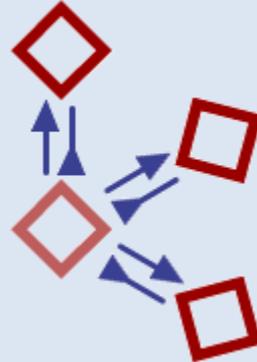


Continue in your project **14-Rose Patterns**.

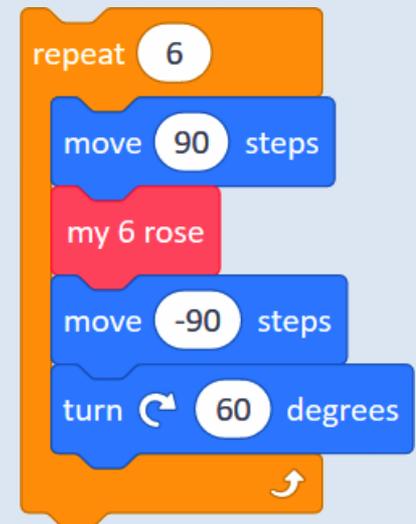
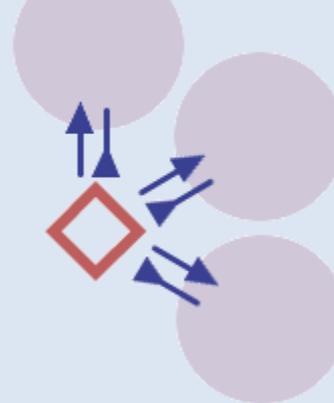
- Build a simple rose pattern with large moves e.g. 90.  
Replace the stamp block in the script by your own **rose** block.



move forward  
stamp  
move backward



move forward  
draw a rose  
move backward

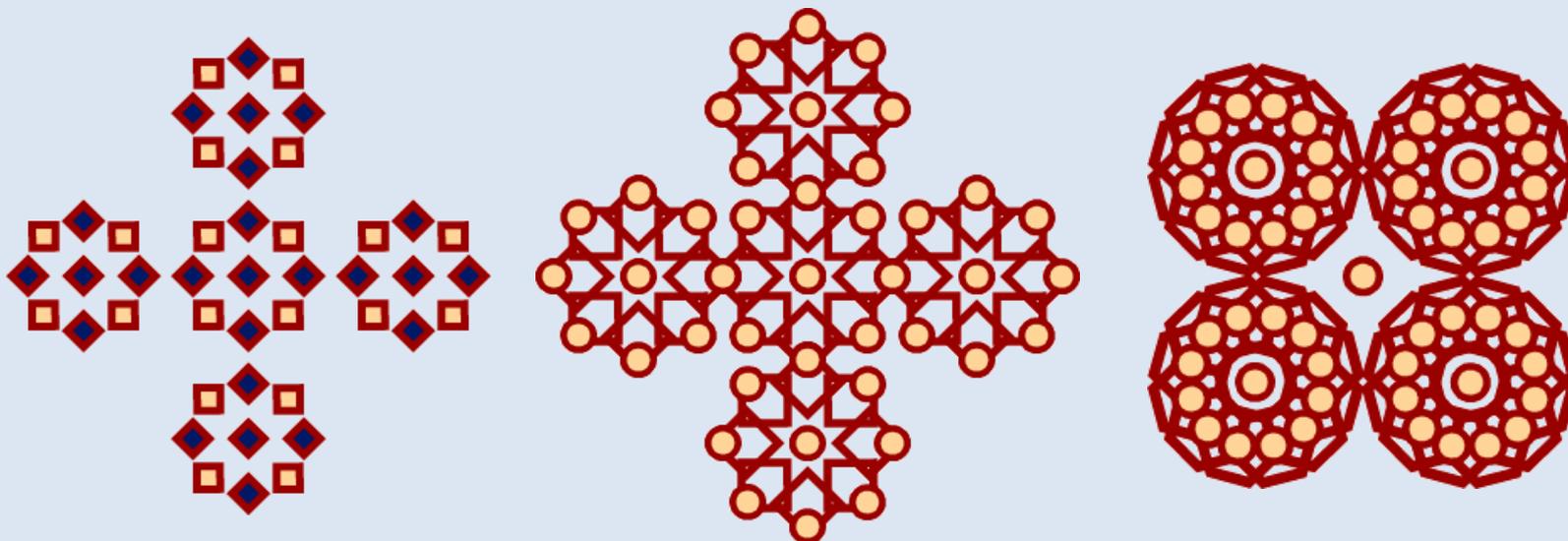


## MODULE 1: INVESTIGATION 4

### Activity 1.4.4 – [Extension] Rose of Roses



- Build your own rose of roses. Some examples are below.





## My **Investigation 4** check list:

- I defined a new block that stamps a rose pattern.
- I used my new block within a script.
- [Extension]** I edited the definition of my new block to change the rose pattern.
- I used what I learned during Module 1 to predict what would happen when different scripts are clicked.
- [Extension]** I built a script to create a **row of roses** using **my rose** pattern block.
- [Extension]** I built a script to create a **rose of roses** using **my rose** pattern block.



- **definition** of a new block is the script that is connected to the **define** hat block of the new block. This tells you what your new block will do when clicked.

