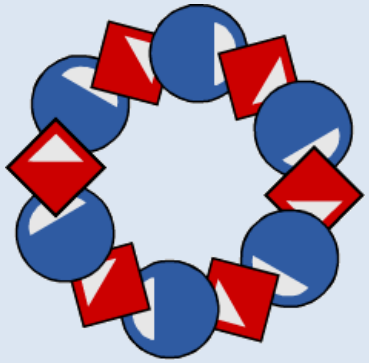
Repeating and Alternating Patterns



ACTIVITY 1.2.1

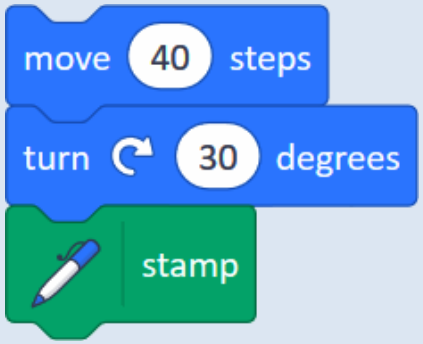
Repeating Flowers

Module 1: Investigation 2

Activity 1.2.1 – Repeating Flowers

Open project **13-Tile Repeat**.

- Click on the **move-turn-stamp** script again and again…

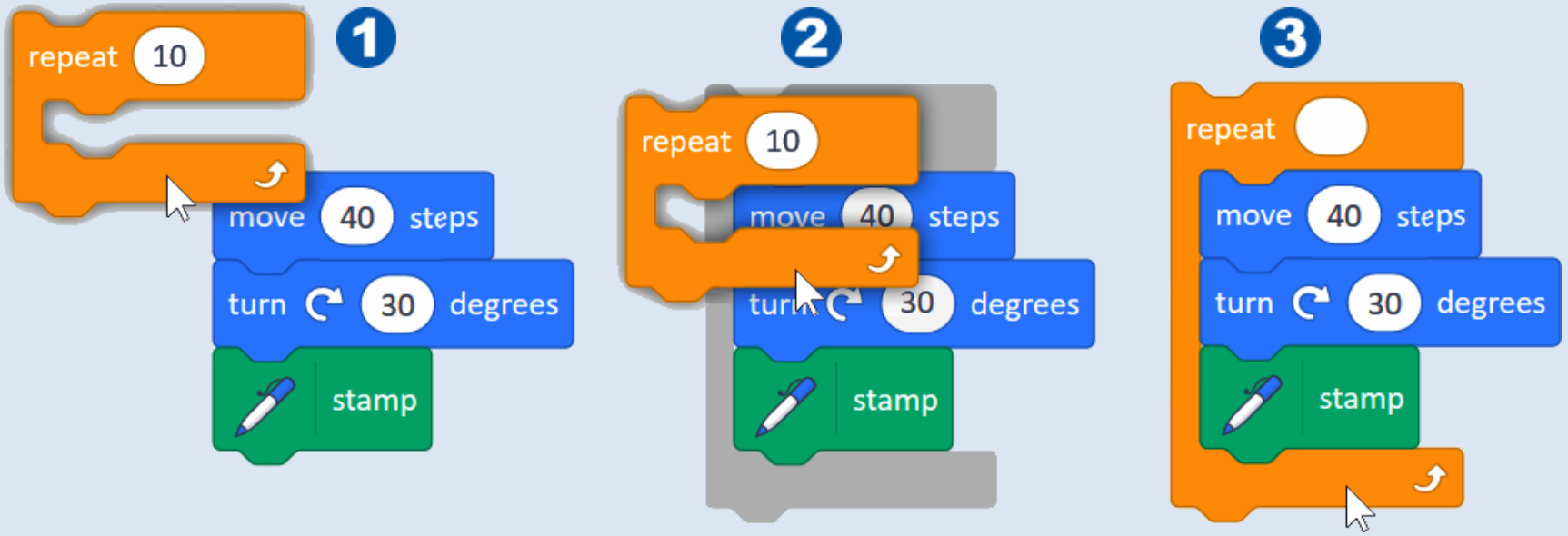


What was the **minimum number** of clicks you needed to complete the pattern?

Module 1: Investigation 2

Activity 1.2.1 – Repeating Flowers

- Add the **repeat** block to your script.

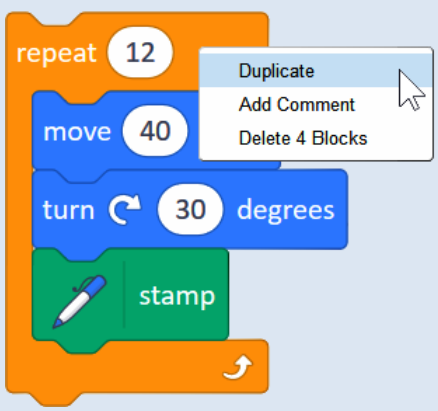


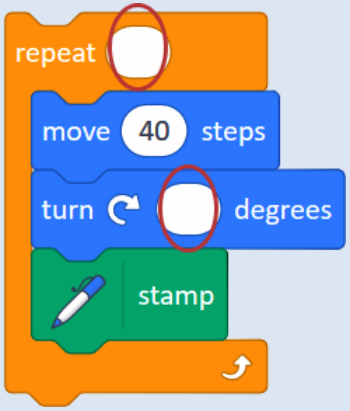
- Fill in the **minimum number** of repeats needed to complete your pattern.

Module 1: Investigation 2

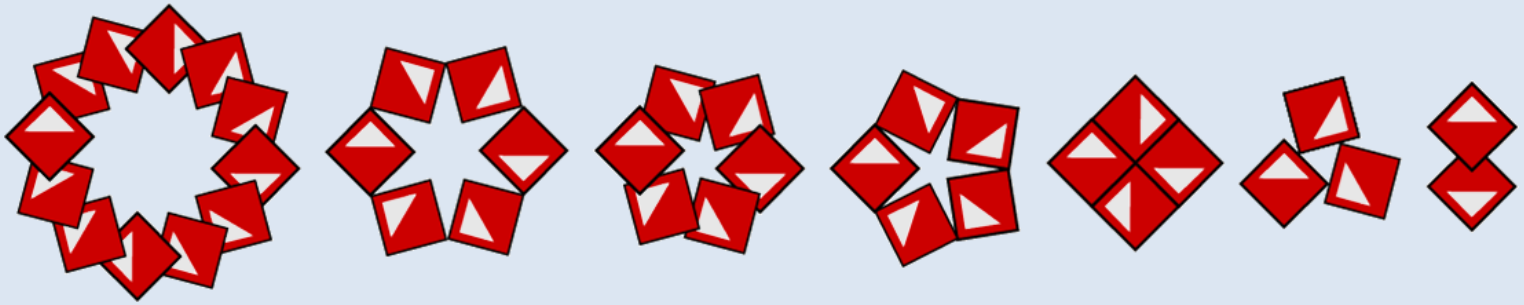
Activity 1.2.1 – Repeating Flowers

- Duplicate your script.





- Change the numbers in the **repeat** and **turn** blocks to create different patterns.



Discussion Questions

- Did you manage to create a complete flower?
- Did your Tile sprite touch the edge of the stage? What happened?
- What number did you put in your **repeat** block? If this was higher or lower would it change the pattern? How?

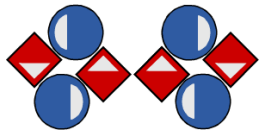
- How many degrees did your Tile sprite turn for each **stamp**?
- How did you decide what values to use in the **repeat** and **turn** blocks?
- How many degrees did your Tile sprite turn in total to create the whole flower? Was this always the same?

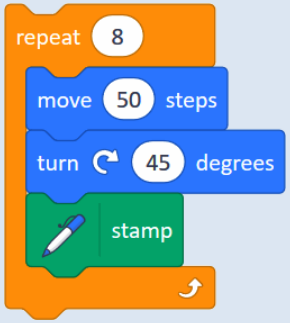
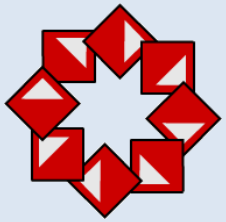
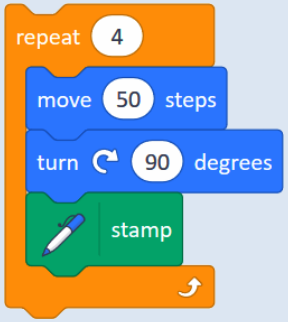
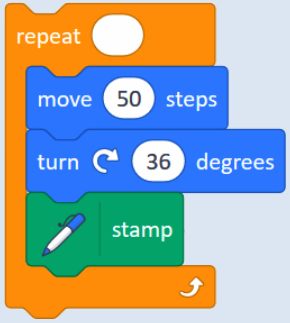
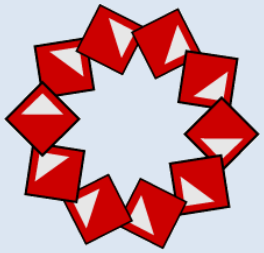
ACTIVITY 1.2.2: UNPLUGGED

Calculating Angles

Module 1: Investigation 2

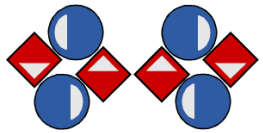
Activity 1.2.2 – Unplugged: Calculating Angles

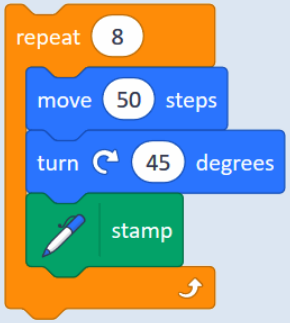
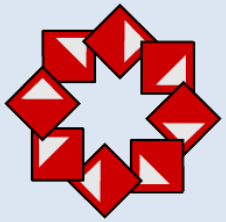
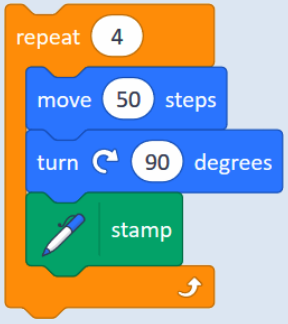
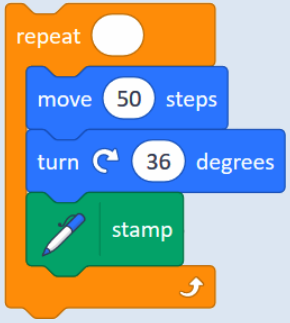
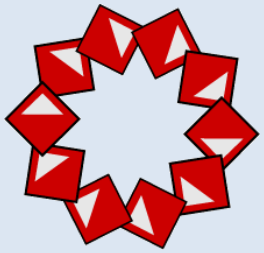


		Number in repeat block	Number of degrees in turn block	Total number of degrees Tile sprite turned
		8	45 degrees	____ degrees
		____	____ degrees	360 degrees
		____	36 degrees	____ degrees

Module 1: Investigation 2

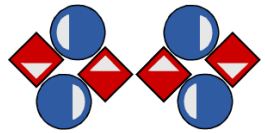
Activity 1.2.2 – Unplugged: Calculating Angles

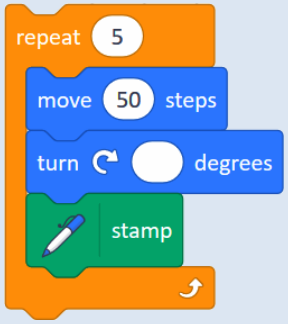


		Number in repeat block	Number of degrees in turn block	Total number of degrees Tile sprite turned
		8	45 degrees	360 degrees
		4	90 degrees	360 degrees
		10	36 degrees	360 degrees

Module 1: Investigation 2

Activity 1.2.2 – Unplugged: Calculating Angles





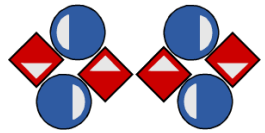
Number in repeat block	Number of degrees in turn block	Total number of degrees Tile sprite turned
5	____ degrees	____ degrees

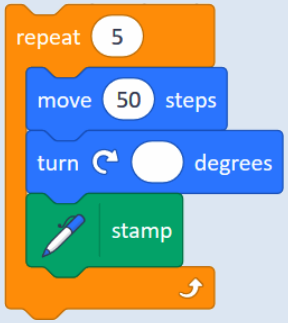
Extension
Can you work out the numbers used in the script that created this pattern?

____	____ degrees	____ degrees

Module 1: Investigation 2

Activity 1.2.2 – Unplugged: Calculating Angles





Number in repeat block	Number of degrees in turn block	Total number of degrees Tile sprite turned
5	72 degrees	360 degrees

Extension
Can you work out the numbers used in the script that created this pattern?

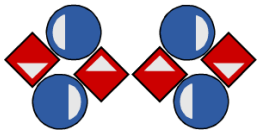
6	60 degrees	360 degrees

ACTIVITY 1.2.3

Alternating Flowers

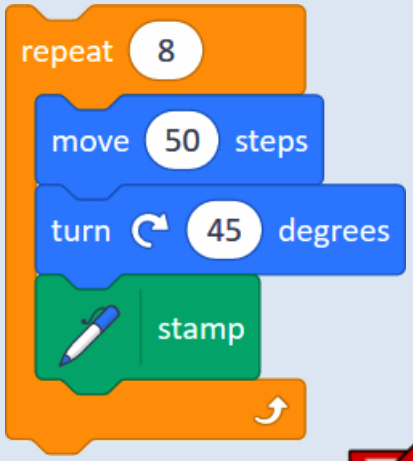
Module 1: Investigation 2

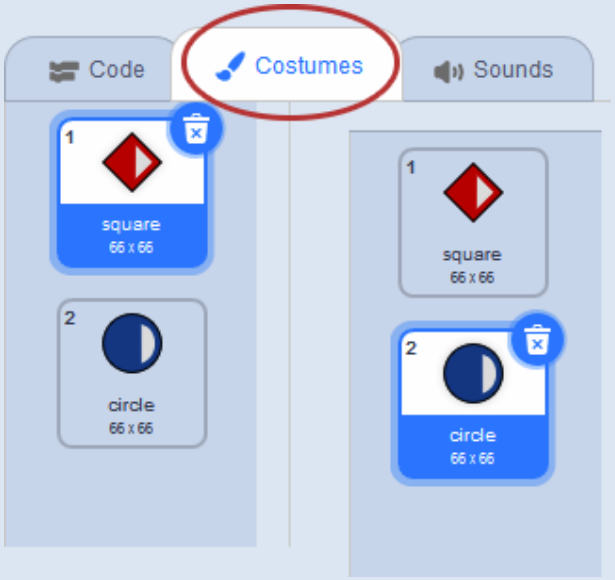
Activity 1.2.3 – Alternating Flowers

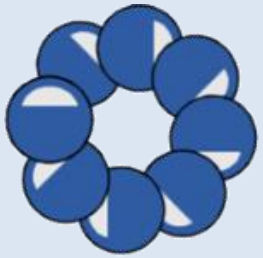


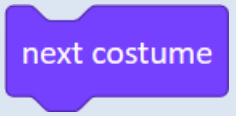
Continue in your project **13-Tile Repeat**.

- Run one of your previous scripts to stamp a pattern. Then run it again with different costumes.



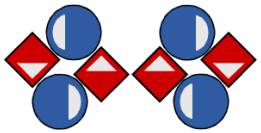




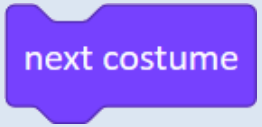


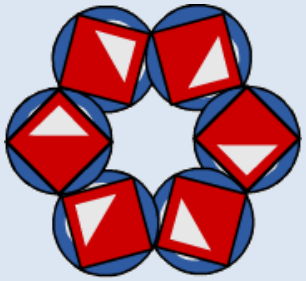
Module 1: Investigation 2

Activity 1.2.3 – Alternating Flowers

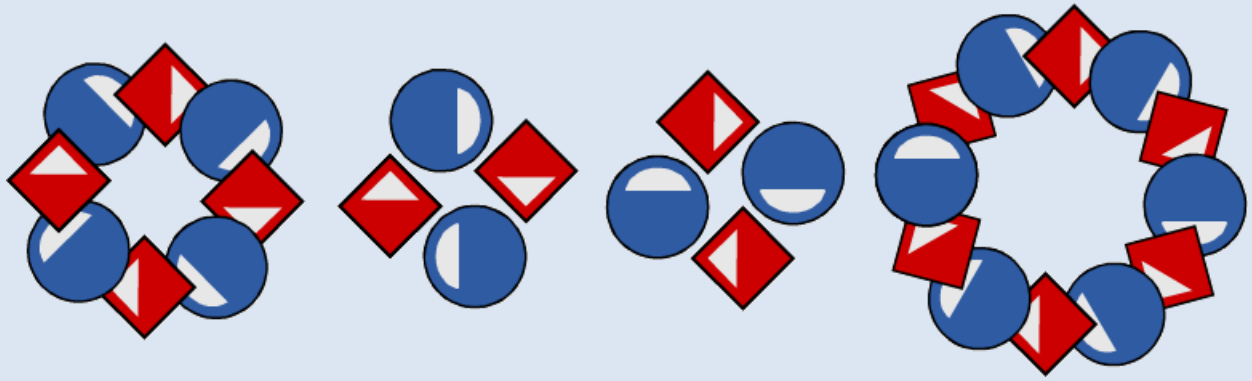


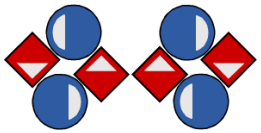
- Use the **next costume** block in your scripts to create the pattern below.





- Now create some of the patterns below or similar patterns.





Discussion Questions

- Where did you place the **next costume** block in your script? If you moved it how might this change your pattern?
- Did you use one **next costume** block or more? Did you build a single script to stamp the whole pattern in one click?

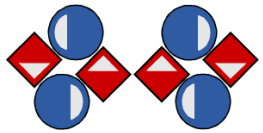
- How many squares and circles were in your patterns?

ACTIVITY 1.2.4 [EXTENSION]

Repeating and Alternating

Module 1: Investigation 2

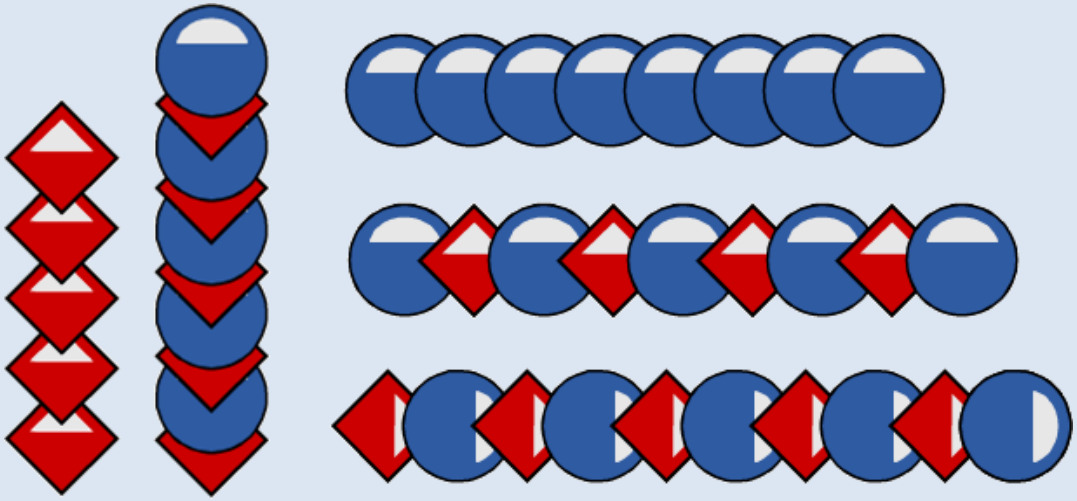
Activity 1.2.4 – [Extension] Repeating and Alternating

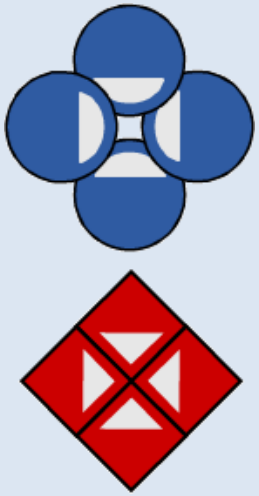


Continue in your project **13-Tile Repeat**.

- Edit your scripts to create patterns similar to the ones below.

more advanced patterns

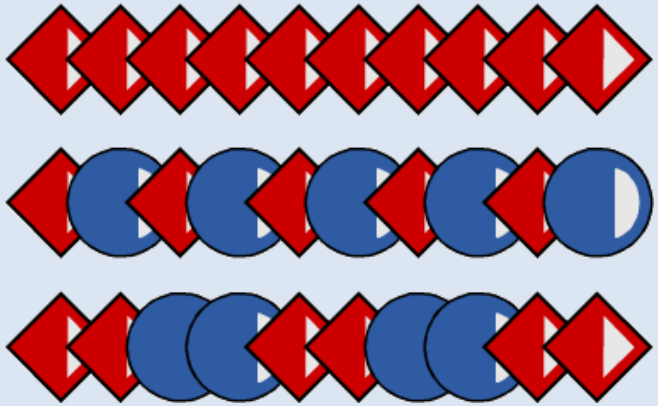




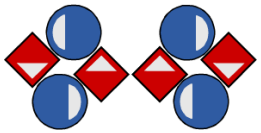
Discussion Questions

- Which patterns did you manage to create?
- Can you describe a strategy that you used to create one of your patterns?

- Did you use different sequences of costumes in your patterns?



MODULE 1: INVESTIGATION 2

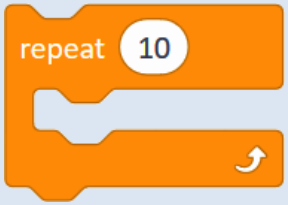


My Investigation 2 check list:

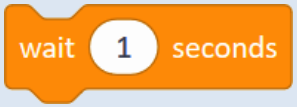
- ☐ I used the **repeat** block to run my script several times.
- ☐ I found the *minimum number* to put in the **repeat** block to complete the circular pattern.
- ☐ I clicked the green flag to reset the stage and the sprite.
- ☐ I used the **next costume** block in my scripts.
- ☐ I created different patterns with alternating costumes.
- ☐ I built a single script to stamp the whole pattern with different costumes in one click.

MODULE 1 INVESTIGATION 2: Key Vocabulary

repetition — means running a sequence of commands a certain number of times



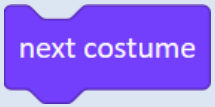
is a **control block** which runs the blocks inside a specified number of times



a command which waits a specified number of seconds, e.g. 1, 2 or 0.2, then continues with the next blocks

total turn — total number of degrees the sprite turns when running a script

costumes — are alternative ways that a sprite can look on the stage



a command which switches to the next costume in the list of the sprite's costumes. The next costume after the last one is the first one in the list again

pattern — repeating sequence when stamping sprite's costume or costumes