MODULE 2: INVESTIGATION 2

Drawing Polygons

ACTIVITY 2.2.1

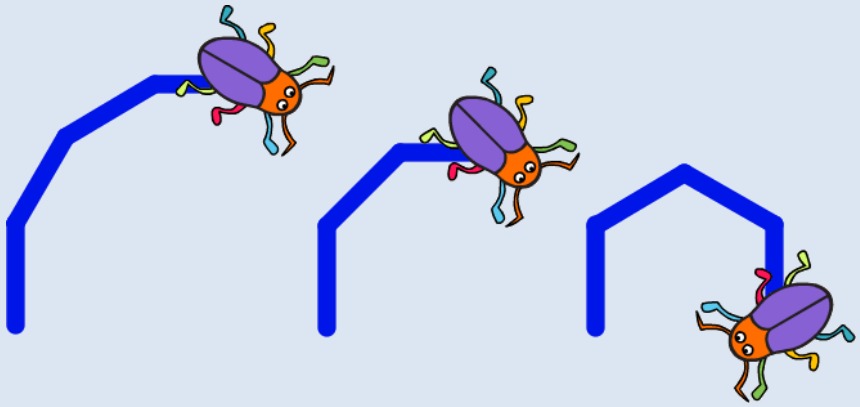
Drawing Polygons

Module 2: Investigation 2

Activity 2.2.1 – Drawing Polygons

Open project **22-Drawing Polygons**.

- Run the *setup script*.
- Snap together one **move** block and one **turn** block, set to any values and click the short script several times (**without** using **repeat**).



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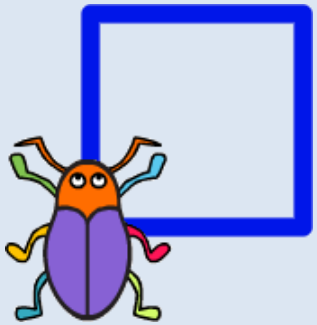
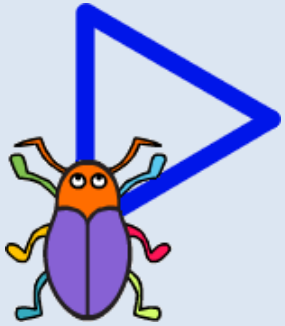
Activity 2.2.1 – Drawing Polygons

- Add the **repeat** block around your script and set it to the **smallest** number to complete your polygon in one click.
- Create a script to draw a **square**.



- Create a script to draw a **triangle.**



Discussion Questions

- How did you work out how to draw your square or triangle?
- How many sides did your other polygons have? What polygons did you draw?
- How many degrees did the Beetle turn in total to make it a closed shape? How many steps did the Beetle move in total?
- What is the link between the **move** and **repeat** blocks in your polygon scripts?
- Did you manage to draw an equilateral triangle? How did you build your script to ensure it was equilateral?

ACTIVITY 2.2.2: UNPLUGGED

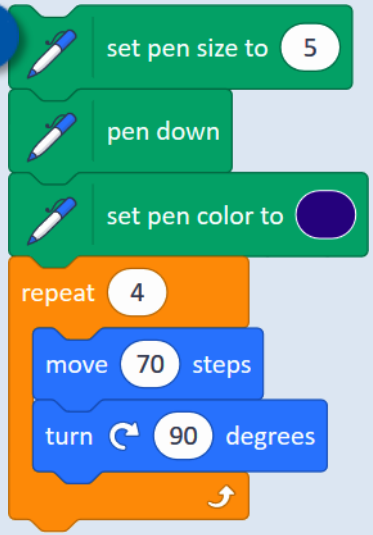
Polygon Scripts

Module 2: Investigation 2

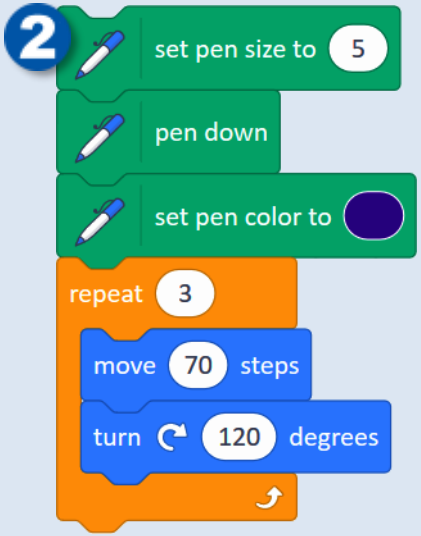
Activity 2.2.2 – Unplugged: Polygon Scripts

Match the script with the polygon that it would draw when you click on it.

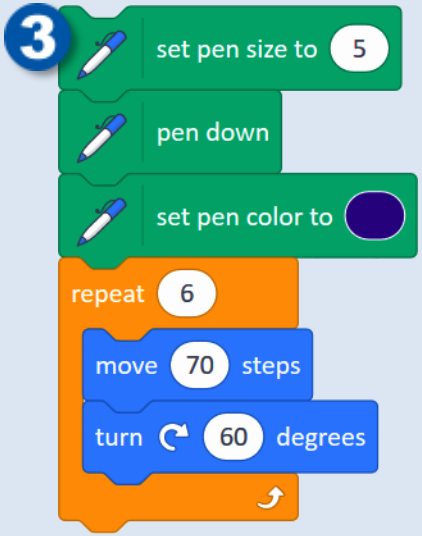
1



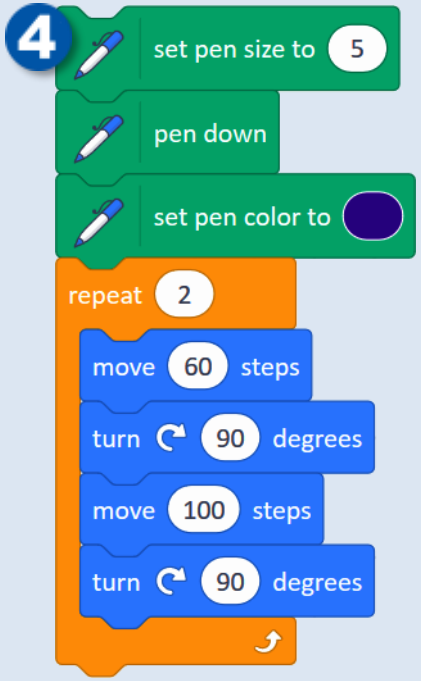
2

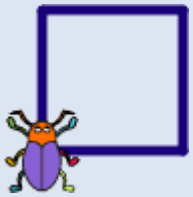


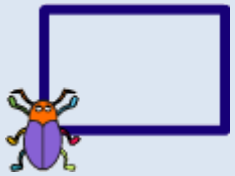
3

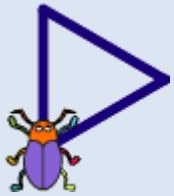


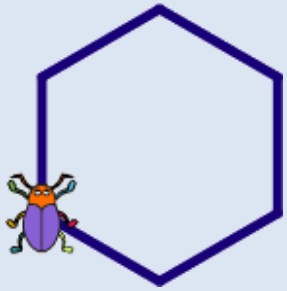
4







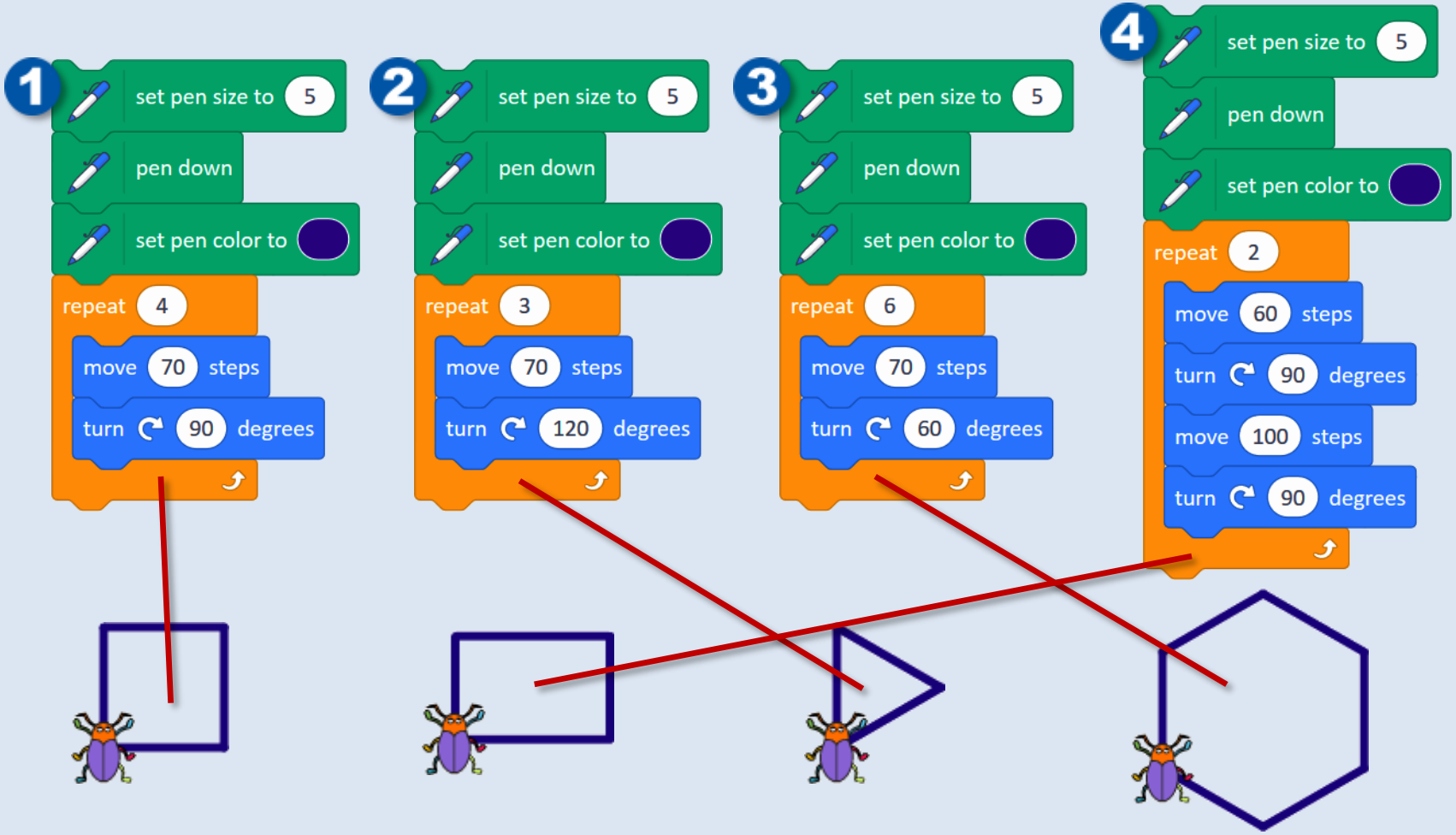




Module 2: Investigation 2

Activity 2.2.2 – Unplugged: Polygon Scripts

- Match the script with the polygon that it would draw when you click on it.



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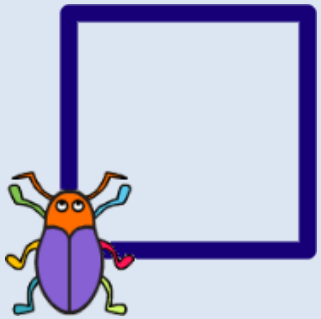
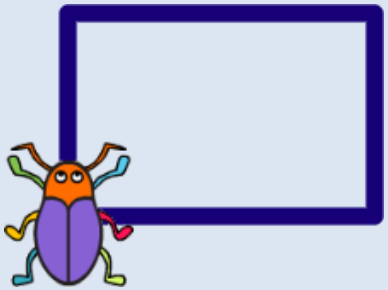
Activity 2.2.2 – Unplugged: Polygon Scripts

Fill in the gaps in the text below to show how you worked out the answer.



This is the correct polygon because:

- it has ____ equal sides and _____ right angles
- the blocks in the **repeat** are run _____ times
- the **move** block is _____ steps
- the Beetle always turns right by _____ degrees



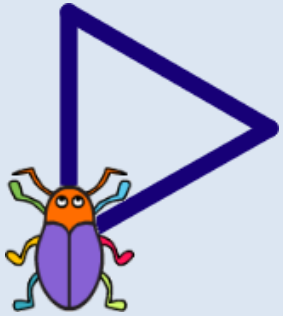
This is the correct polygon because:

- it has _____ pairs of equal sides opposite each other, a shorter pair and a longer pair
- it has _____ right angles
- the blocks in the **repeat** are run _____ times
- there are _____ **move** blocks in the **repeat**
- there are _____ **turn** blocks in the **repeat** and the Beetle always turns right by _____ degrees

Module 2: Investigation 2

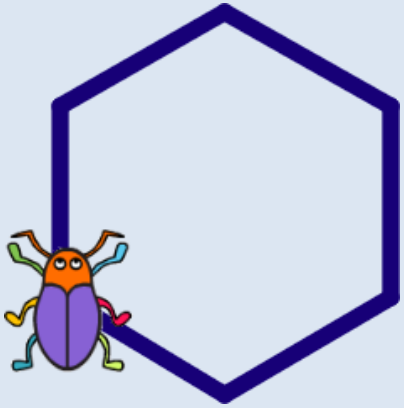
Activity 2.2.2 – Unplugged: Polygon Scripts

Fill in the gaps in the text below to show how you worked out the answer.



This is the correct polygon because:

- it has _____ equal sides and _____ equal angles
- the blocks in the **repeat** are run _____ times
- the **move** block is _____ steps
- the Beetle always turns right by _____ degrees



This is the correct polygon because:

- it has _____ equal sides and _____ equal angles
- the blocks in the **repeat** are run _____ times
- the **move** block is _____ steps
- the Beetle always turns right by _____ degrees

ACTIVITY 2.2.3

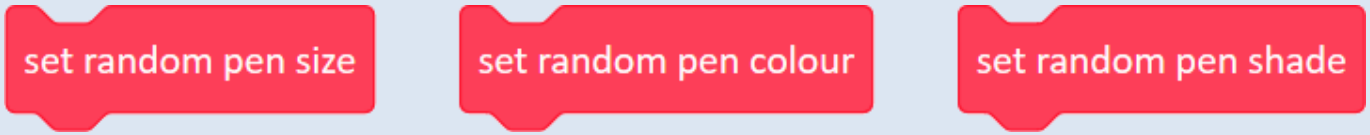
Using and Defining More Blocks

MODULE 2: INVESTIGATION 2

Activity 2.2.3 – Using and Defining More Blocks

Continue in **22-Drawing Polygons**.

- Go to the **My Blocks** group and find the new blocks that are there.



- Experiment with these new blocks by adding them to the top of your *square script* or inside the script.

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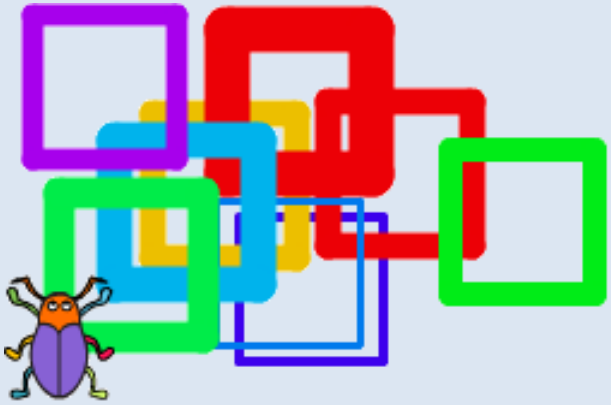
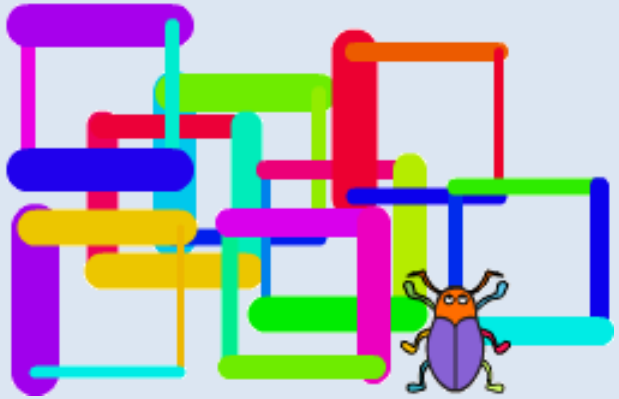
Activity 2.2.3 – Using and Defining More Blocks

- Drag the Beetle around the stage to draw squares with different coloured and sized lines.





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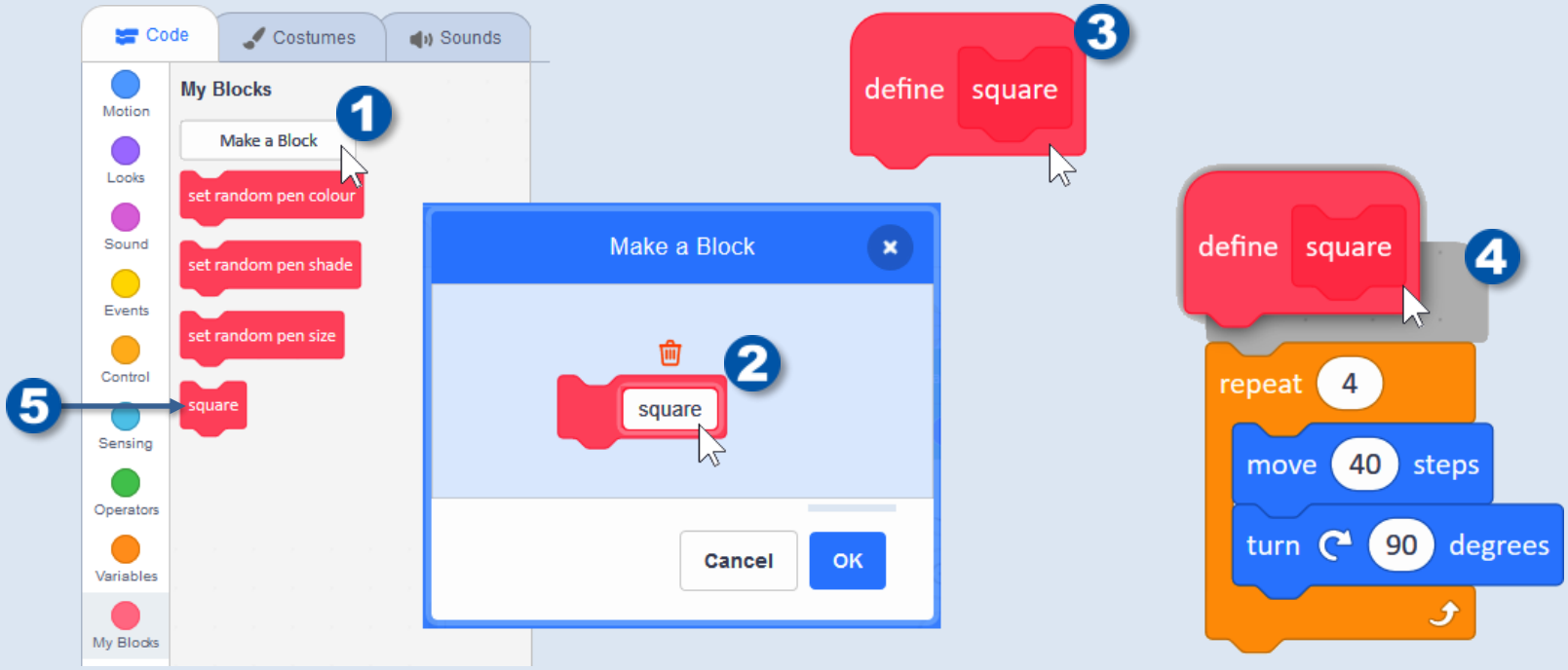
Activity 2.2.3 – Using and Defining More Blocks

- Make a new block, see 1, and give your block a meaningful name e.g. *square*, see 2.
- Drag the hat block 3 and put it as a hat on top of the script for drawing a square 4. From now use the new block 5.



Discussion Questions

- What is the difference between *pen colour* and *pen shade*?
- Where did you try placing the **set random pen** blocks in your script – how did this change your drawing?
- Why would it be a good idea to define a new block for a script you use many times in your project (e.g. drawing a square)?
- Why is it important to give a new block a meaningful name?

ACTIVITY 2.2.4

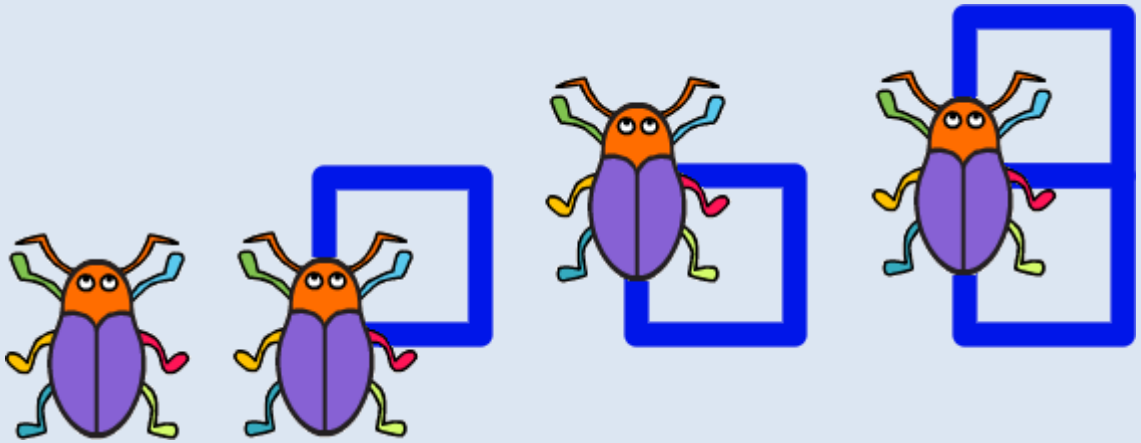
Combining New Blocks

Module 2: Investigation 2

Activity 2.2.4 – Combining New Blocks

Continue in **22-Drawing Polygons**.

- Build a script, using your **square** block, to **draw a tower of two or three squares**.



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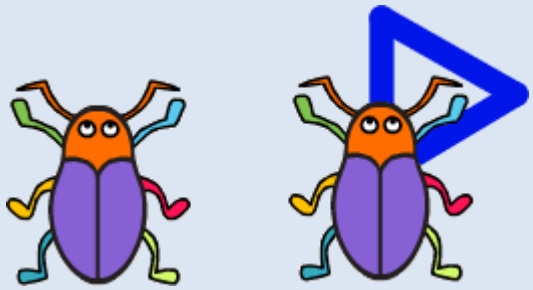
Activity 2.2.4 – Combining New Blocks

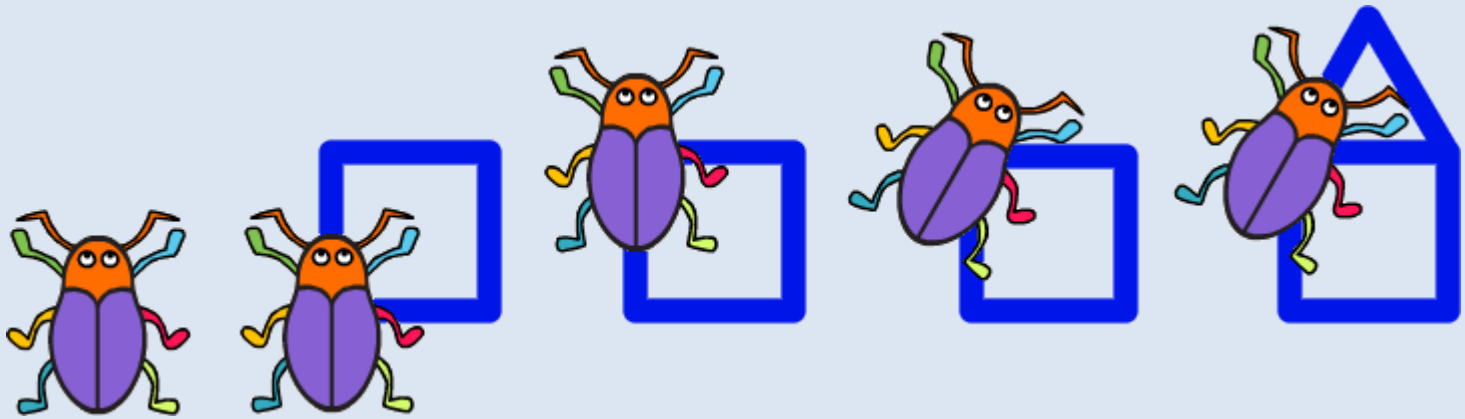
- Make another new block **triangle** with sides that are the same length as your square.



Module 2: Investigation 2

Activity 2.2.4 – Combining New Blocks

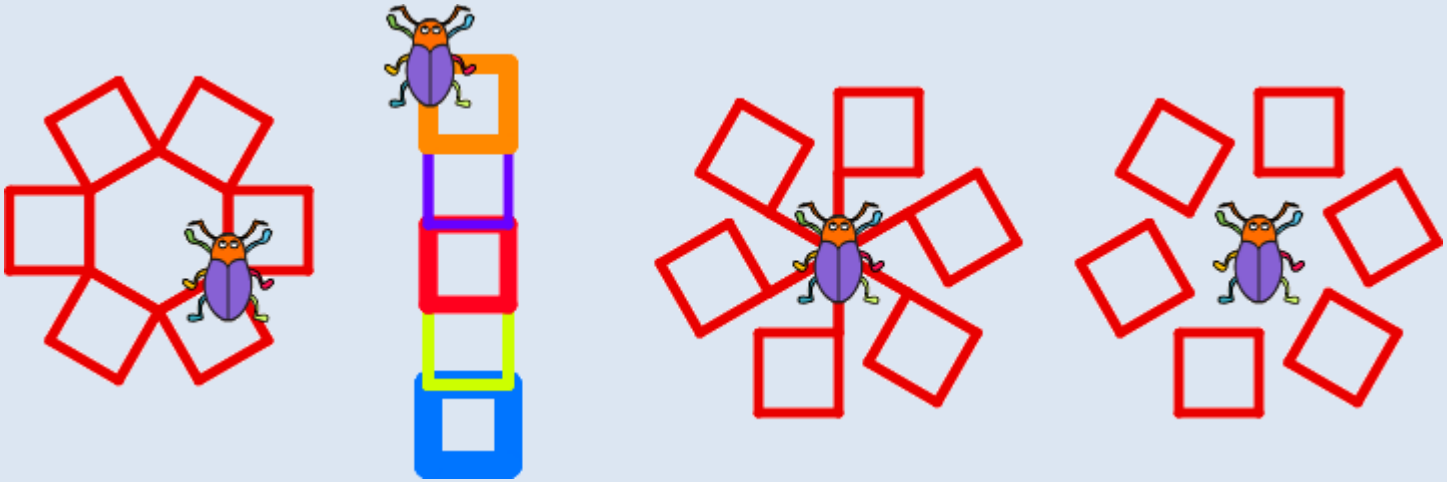
- Combine your **square** and **triangle** blocks in one script to **draw a house**.



Module 2: Investigation 2

Activity 2.2.4 – [Extension] Combining New Blocks

- **[Extension]** Try building scripts to draw some of the example pictures below using just the **square** block.



Discussion Questions

- What problems did you encounter when building a script for drawing a tower of two squares and how did you solve these?
- How did you use your new blocks to create a house?
- Did defining a new block for **square** and **triangle** make it easier to draw the house? How?
- What problems did you encounter when drawing your house?
- How did you discover the angle that you need to turn by in order to draw the roof on your house correctly?

MODULE 2: INVESTIGATION 2

My Investigation 2 check list:

- ☐ I built a script to draw a square.
- ☐ I built a script to draw an equilateral triangle.
- ☐ I envisaged what polygons different scripts would draw.
- ☐ I used pre-defined blocks within my square script to draw squares with sides of random widths and colours.
- ☐ I defined my own **square** and **triangle** blocks.
- ☐ I used my **square** block to draw a tower.
- ☐ I used my **square** and **triangle** blocks to draw a house.