

# On the Tiles

## Desirable Features: Exploring Programming

### Task Description

In this task pupils should use a suitable package, such as Black Cat Logo, to design three regular shapes - a square, triangle and hexagon. These will be used to design a tessellating pattern.

Pupils working at Level 3, should use a repeat command (Part 1 in Pupil Notes).

Pupils working at Level 4, will devise and name a procedure for each of the shapes (Part 2 in Pupil Notes). They should make use of the tools available within the program.

This task also provides pupils with the opportunity to develop pupils' skills in numeracy (Using Mathematics).

### Requirements for UICT

This task focuses on the following aspects of UICT across the curriculum which have been highlighted in **bold**.

### Areas of Learning

Depending on the context chosen by the teacher, this task has the potential to support one or more of the following Areas of Learning:

<p><b>Explore</b></p> <ul style="list-style-type: none"> <li>access, select, interpret and research information from safe and reliable sources;</li> <li><b>investigate, make predictions and solve problems through interaction with digital tools.</b></li> </ul>
<p><b>Express</b></p> <ul style="list-style-type: none"> <li>create, develop, present and publish ideas and information responsibly using a range of digital media and manipulate a range of assets to produce multimedia products.</li> </ul>
<p><b>Exchange</b></p> <ul style="list-style-type: none"> <li>communicate safely and responsibly using a range of contemporary digital methods and tools, exchanging, sharing, collaborating and developing ideas digitally.</li> </ul>
<p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li><b>talk about, review and make improvements to work, reflecting on the process and outcome and consider the sources and resources used, including safety, reliability and acceptability.</b></li> </ul>
<p><b>Exhibit</b></p> <ul style="list-style-type: none"> <li><b>manage and present their stored work and showcase their learning across the curriculum, using ICT safely and responsibly.</b></li> </ul>

The Arts	
<b>Language and Literacy</b>	✓
<b>Mathematics and Numeracy</b>	✓
Personal Development and Mutual Understanding	
Physical Education	
The World Around Us	

Please Note: For assessment purposes, only the 'E's that are covered at the level(s) stated on the task have been bolded.

Depending on how the task is approached, it may touch on elements of the unbolded 'E's, although not necessarily at the level(s) stated.

# On the Tiles

## Thinking Skills and Personal Capabilities

This assessment task also provides pupils with the opportunity to demonstrate one or more of the following aspects of Thinking Skills and Personal Capabilities:

Managing Information  
 Thinking, Problem-Solving and Decision-Making  
 Being Creative  
 Working with Others  
 Self-Management.

## Prior Knowledge/Experience

Depending on the level at which they are working, pupils should have some experience in some of the following:

- regular 2D shapes and their angle properties;
- tessellating patterns;
- using Black Cat Logo (or other Logo program);
- altering pen width and colour;
- using repeat commands to draw patterns/shapes;
- designing and naming simple procedures to draw patterns/shapes; and
- saving and printing work.

## Resources

Suitable software, for example, Black Cat Logo or other Logo program.

Optional: This task can be used with Scratch see Pupil Notes – (Using Scratch)

## Managing the Task

Pupils should be given opportunities to:

### Plan

Pupils should plan and write commands to draw the three regular shapes using the Pupil Notes as a stimulus.

### Do

Pupils should work individually to test out the commands using a suitable ICT package. They should make use of pen width and colour icons in their overall tessellating pattern. They should save their work.

### Review

Pupils should be given the opportunity to discuss their pattern with their peers. They should reflect on the process and make any improvements if required.

## Assessing Pupils’ Responses to the Task

The first column of the Assessment Criteria Grid sets, in bold, the Requirements for UICT that are covered in this task. Alongside this are the Levels of Progression (those related to the task are in bold) and the UICT Desirable Features for Exploring Programming at Levels 3 and 4. These Desirable Features have been produced as guidance for teachers to consider when observing a pupil and assigning a level to a piece of work. When coming to a holistic judgement of the pupils’ level of

UICT competence, teachers should ensure that these Desirable Features are used in conjunction with the UICT Levels of Progression.

**This task may also provide opportunities for pupils to work collaboratively online (Exchange) and showcase work online (Exhibit). Teachers should include these, where possible, as set out in the Desirable Features.**

Assessment Criteria Grid		
UICT Requirements	Level 3	Level 4
<p><b>Explore</b></p> <ul style="list-style-type: none"> <li>access, select, interpret and research information from safe and reliable sources;</li> <li><b>investigate, make predictions and solve problems through interaction with digital tools.</b></li> </ul>	<p>Pupils can:</p> <ul style="list-style-type: none"> <li>research, select, edit and use information from given digital sources (explore);</li> <li><b>carry out and edit a series of instructions, make predictions and solve problems using a digital device or environment (explore);</b></li> </ul>	<p>Pupils can:</p> <ul style="list-style-type: none"> <li>research, select, edit and use assets from a range of digital sources (explore);</li> <li><b>investigate and solve problems in a digital environment (explore);</b></li> </ul>
<p><b>Express</b></p> <ul style="list-style-type: none"> <li>create, develop, present and publish ideas and information responsibly using a range of digital media and manipulate a range of assets to produce multimedia products.</li> </ul>	<ul style="list-style-type: none"> <li>communicate and develop ideas by creating and editing text onscreen – combining this with an appropriate selection of images and/or sounds (express);</li> </ul>	<ul style="list-style-type: none"> <li>process found or self-produced assets, including text, data, sound, still or moving images, and combine these to create, present and communicate their work, showing an awareness of audience and purpose (express);</li> </ul>
<p><b>Exchange</b></p> <ul style="list-style-type: none"> <li>communicate safely and responsibly using a range of contemporary digital methods and tools, exchanging, sharing, collaborating and developing ideas digitally.</li> </ul>	<ul style="list-style-type: none"> <li>understand that digital methods can be used to communicate and make a contribution to a supervised online activity (exchange);</li> </ul>	<ul style="list-style-type: none"> <li>use contemporary digital methods to communicate, exchange and participate in a range of supervised online activities (exchange);</li> </ul>
<p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li><b>talk about, review and make improvements to work, reflecting on the process and outcome and consider the sources and resources used, including safety, reliability and acceptability.</b></li> </ul>	<ul style="list-style-type: none"> <li><b>make modifications to improve their work (evaluate);</b> and</li> </ul>	<ul style="list-style-type: none"> <li><b>use appropriate ICT tools and features to improve work (evaluate);</b> and</li> </ul>
<p><b>Exhibit</b></p> <ul style="list-style-type: none"> <li><b>manage and present their stored work and showcase their learning across the curriculum, using ICT safely and responsibly.</b></li> </ul>	<ul style="list-style-type: none"> <li><b>save using file names and select work to showcase learning digitally (exhibit).</b></li> </ul>	<ul style="list-style-type: none"> <li><b>select, organise, store and retrieve their work to showcase learning digitally in a personalised area (exhibit).</b></li> </ul>

Assessment Criteria Grid

UICT Requirements	Desirable Features - Level 3 (Exploring Programming)	Desirable Features - Level 4 (Exploring Programming)
<p><b>Explore</b></p> <ul style="list-style-type: none"> <li>access, select, interpret and research information from safe and reliable sources;</li> <li><b>investigate, make predictions and solve problems through interaction with digital tools.</b></li> </ul>	<p>Typically the pupil can:</p> <ul style="list-style-type: none"> <li>input simple sequences of commands (explore);</li> <li>use more efficient commands such as repeat (explore);</li> <li>work collaboratively online if appropriate (exchange);</li> <li>talk about how and why they chose commands and suggest modifications (evaluate); and</li> <li>save work to a specified location and give it a suitable file name (exhibit).</li> </ul>	<p>Typically the pupil can:</p> <ul style="list-style-type: none"> <li>input more complex sequences of commands (explore);</li> <li>build and edit simple procedures (explore);</li> <li>work collaboratively online, for example, using Scratch, download a project and edit it (exchange);</li> <li>discuss how they could improve their commands and procedures and make any necessary modifications (evaluate); and</li> <li>showcase work by uploading to a pre-prepared class e-portfolio (exhibit).</li> </ul>
<p><b>Express</b></p> <ul style="list-style-type: none"> <li>create, develop, present and publish ideas and information responsibly using a range of digital media and manipulate a range of assets to produce multimedia products.</li> </ul>		
<p><b>Exchange</b></p> <ul style="list-style-type: none"> <li>communicate safely and responsibly using a range of contemporary digital methods and tools, exchanging, sharing, collaborating and developing ideas digitally.</li> </ul>		
<p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li><b>talk about, review and make improvements to work, reflecting on the process and outcome and consider the sources and resources used, including safety, reliability and acceptability.</b></li> </ul>		
<p><b>Exhibit</b></p> <ul style="list-style-type: none"> <li><b>manage and present their stored work and showcase their learning across the curriculum, using ICT safely and responsibly.</b></li> </ul>		

Pupils should demonstrate, when and where appropriate, knowledge and understanding of e-safety including acceptable online behaviour.

# On the Tiles

## Part 1

Use Black Cat Logo (or other suitable program) to design three shapes which could be tessellated - a square, a triangle and a hexagon.

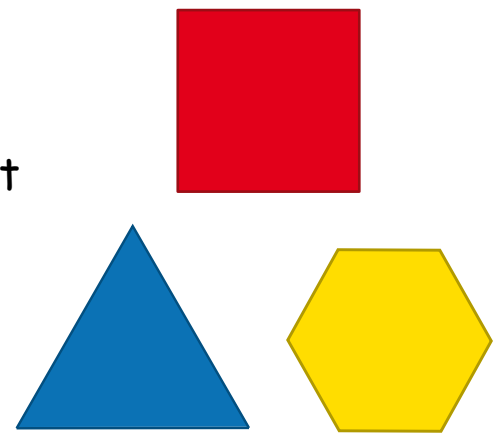
Remember that the length of each side in your shapes must be the same in order that your shape will tessellate.

Use the REPEAT command to make your tessellating shape.

Choose a colour and pen width.

Save your work.

Show your shapes to others in the class.

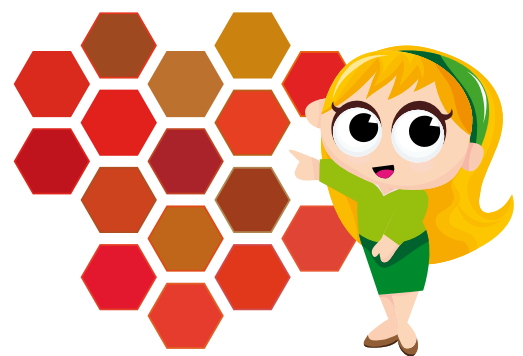


## Part 2

Choose one of your shapes to tessellate. Write a procedure to draw your shape then use it to draw a tessellating pattern.

Save your work.

Discuss how you made your patterns with others in the class.



# On the Tiles

## Using Scratch

### Part 1

Use Scratch to design three shapes which could be tessellated - a square, a triangle and a hexagon.

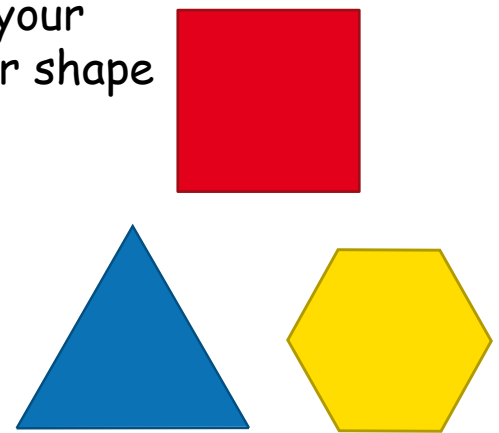
Remember that the length of each side in your shapes must be the same in order that your shape will tessellate.

Use a REPEAT loop to make your tessellating shape.

Choose a colour and pen width.

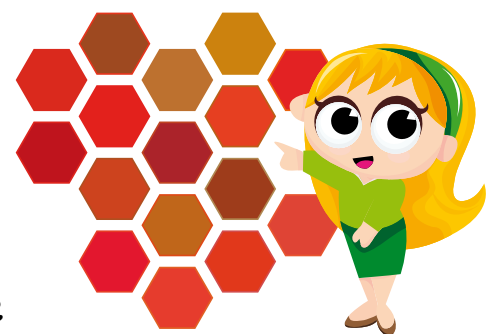
Save your work.

Show your shapes to others in the class.



### Part 2

Use Scratch to design three tessellating patterns - one using a square, one using a triangle and one using a hexagon. Use procedures (broadcast/receive) to make your patterns. Choose one of your shapes to tessellate. Write a procedure to draw your shape using broadcast/receive and use it to make a tessellating pattern.



Save your work.

Discuss how you made your patterns with others in the class.