## Year 6 Transition Lesson

You will need a pencil, paper and some colouring pencils! We will be doing Tessellation today.

## STARTER

## TASK

Name the following shapes below:

HEXAGON
2)

3)

4)

5)

ISOSCELES TRAPEZIUM
7)

HEPTAGON
8)

9)

DECAGON
10)


## EXTENSION

Sketch and name as many solids (3D shapes) as you can.

A tessellation is created when a shape is repeated over and over again covering an area without any gaps or overlaps.

Can you think of any real life tessellations?
I'll start you off, honeycomb


## You have 2 minutes to think of some other examples of real-life tessellations...

$25$


## Pineapple



## Floor

Tiles

We are going to investigate what shapes can tessellate.

First we need to know a definition; what do I mean when I say regular polygons?

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First we need to know a definition; what do I mean when I say regular polygons?

A polygon is a 2D shape with straight sides.
A regular polygon means all the sides are the same size!

These are the shapes we will be investigating, can you remember what they are called?


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Triangle


Hexagon

Square

Can you make a prediction if any of these regular polygons tessellate?
Draw a couple in your book/paper to see if they tessellate. I will give you 5 minutes to make a prediction
If you want longer just pause the presentation!


Lets find out if your predictions are correct!


Equilateral Triangles:
Do tessellate



## Regular Octagons: Don't tessellate:

## This is called a semi-regular tessellation since more than one regular polygon is used.



## There are only 3 regular tessellations. Can you see why?



Take 6 minutes to see if you can work out why.

## There are only 3 regular tessellations. Can you see why



Consider the sum of the interior angles about the indicated point

This is called regular tessellation is a repeating pattern of a regular polygon, which fits together exactly, leaving NO GAPS.


## Non Regular Tessellations

A non-regular tessellation is a repeating pattern of a non-regular polygon, which fits together exactly, leaving NO GAPS.
All triangles and all quadrilaterals tessellate.
Why do you think that it?


## Your turn...

Drawing tessellations


Can you take any 3 of these shapes and Tessellate them.

Either together or on their own.

Use your colouring pencils to indicate the different shapes!

## It's not just maths shapes that can



Maurits Cornelis Escher, usually referred to as M. C. Escher, was a Dutch graphic artist. He is known for his often mathematically inspired tessellations.

Let's take a look at some of his work...






## HOW TO MAKE AN ESCHERESQUE TESSELLATION



STEP 1
Begin with a simple shape - use pencil!


STEP 5
Erase the original shape (square)


STEP 2
Change the shape of one side


STEP 3
Copy this line on the opposite side


STEP 4
Rotate the line and repeat it on the remaining edges

STEP 8
Repeat 8 10 times to tessellate


## HOW TO MAKE AN ESCHERESQUE METAMORPHOSES

This one is hard, there is a picture on the other side so you can see what it looks like!


STEP 1
Begin with a simple shape


STEP 6
Erase the square


STEP 2
Change the shape of one side


STEP 7
Turn shape looking for hidden animals


Copy this line on the opposite side


Draw a shape that separates the two hidden shapes found


STEP 4
Change the shape at the top


Repeat this line at the bottom


STEP 10
Separate the two shapes so you can use them one at a time

HOW TO MAKE AN ESCHERESQUE METAMORPHOSES

$4$

