Thinking like an Engineer

This resource has been provided courtesy of Medway UTC, Chatham, Kent and was prepared while the school was involved in the 'Thinking like an Engineer' project 2014-2016. Please acknowledge the school if you use this material.

Website: http://www.medwayutc.co.uk/

Medway UTC Engineering Habits of Mind

Visualising

Improving

Problem Finding

Systems Thinking
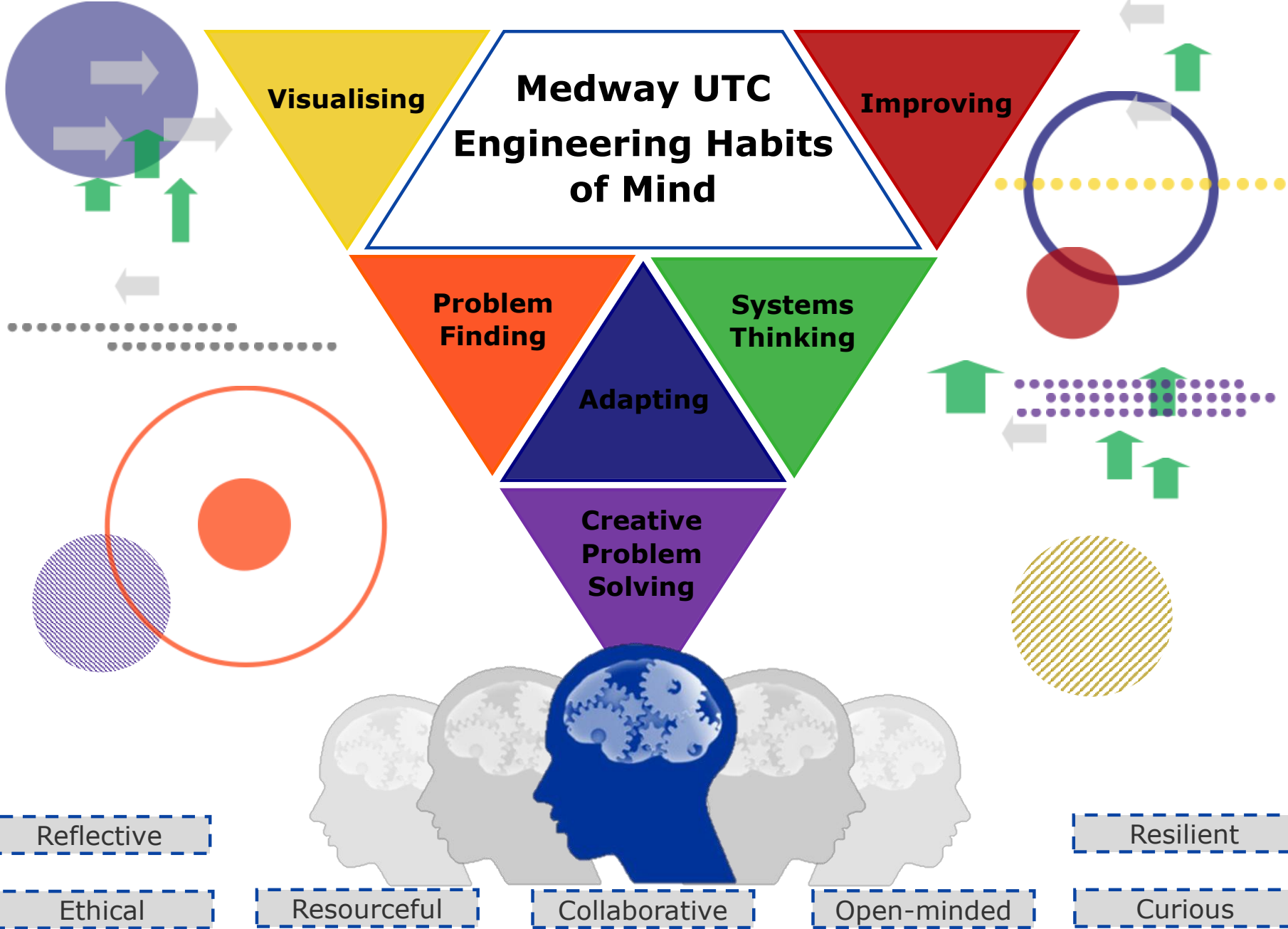
Adapting
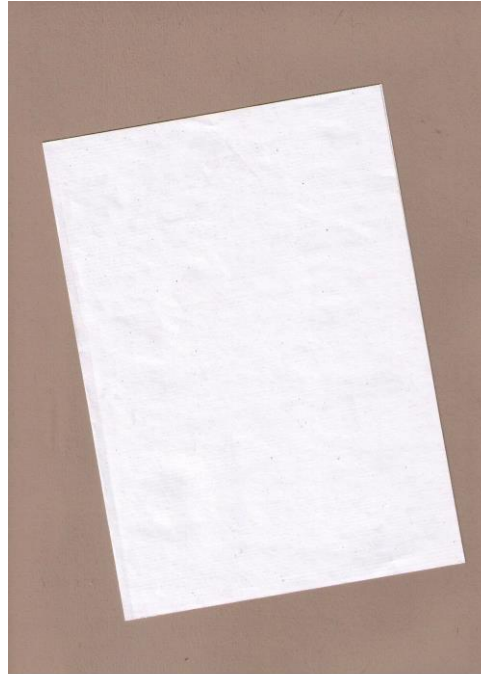
Creative Problem Solving

Reflective

Ethical

Resourceful

Collaborative

Open-minded

Resilient

Curious
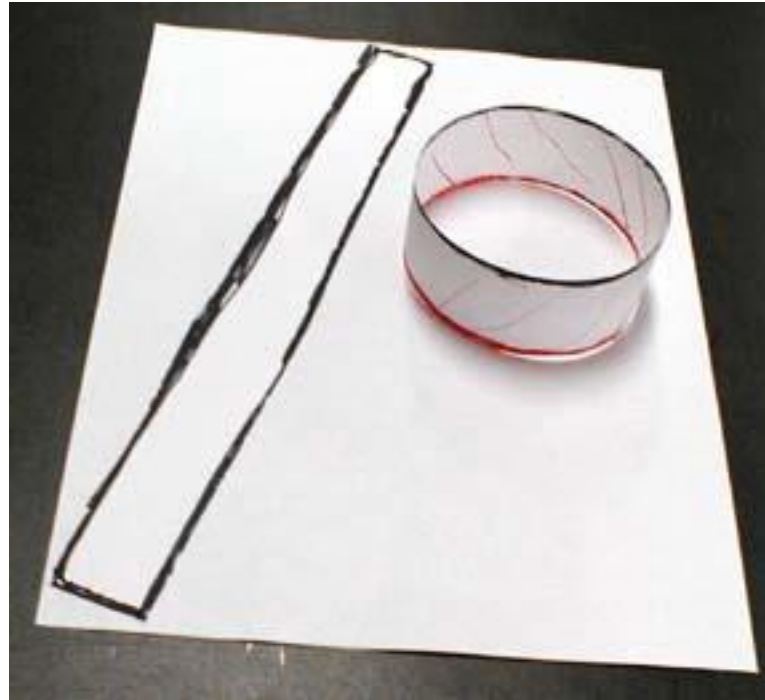
How many <u>sides</u> and how many <u>edges</u> does a piece of paper have?

Defining the problem
= problem finding

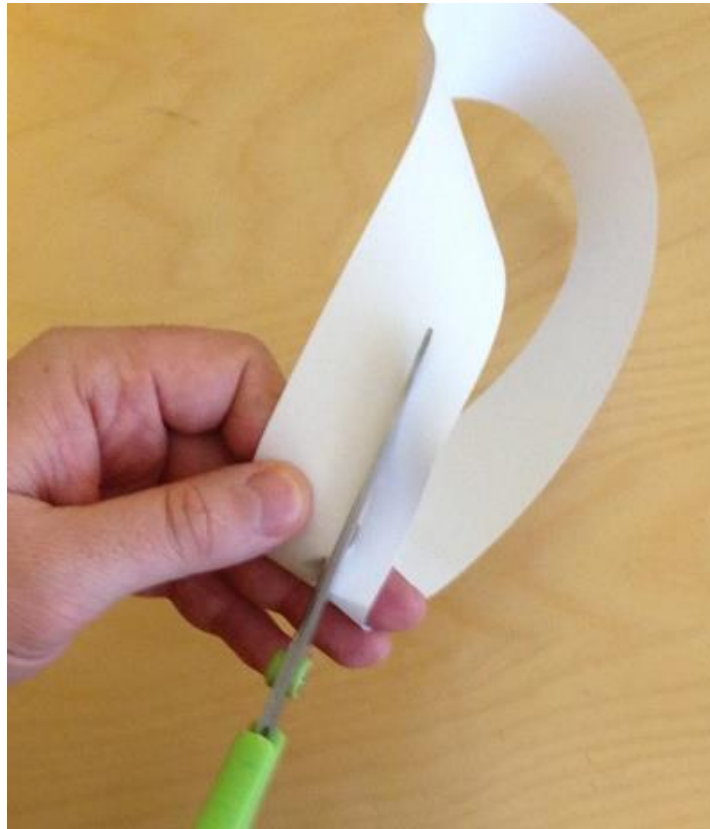# How many <u>sides</u> and how many <u>edges</u> does a loop of paper have?
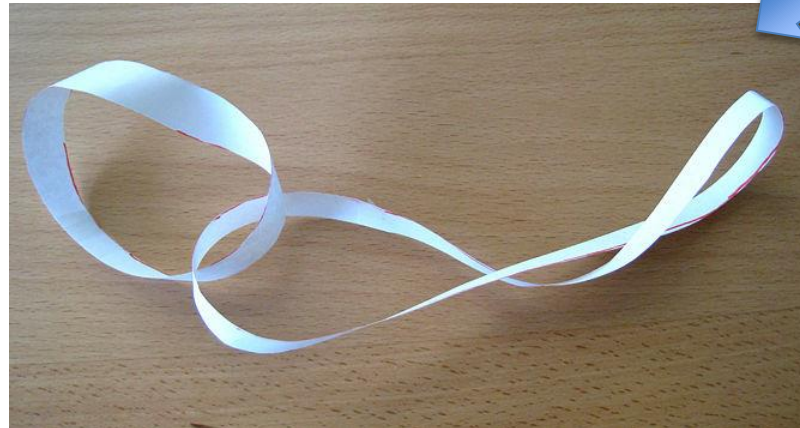

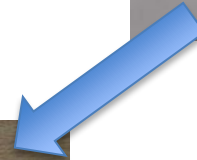# Turning abstract ideas into concrete = visualising
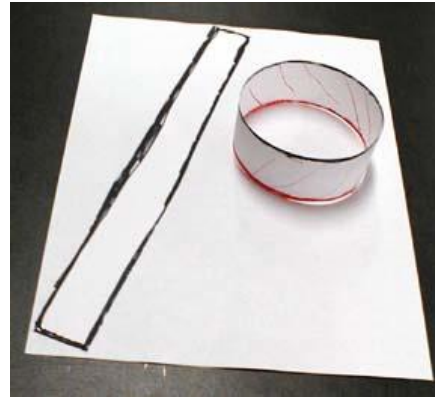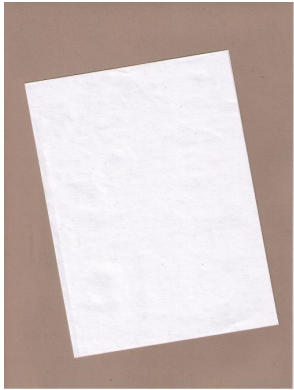
This is a Mobius Strip

It only has one side and one edge!
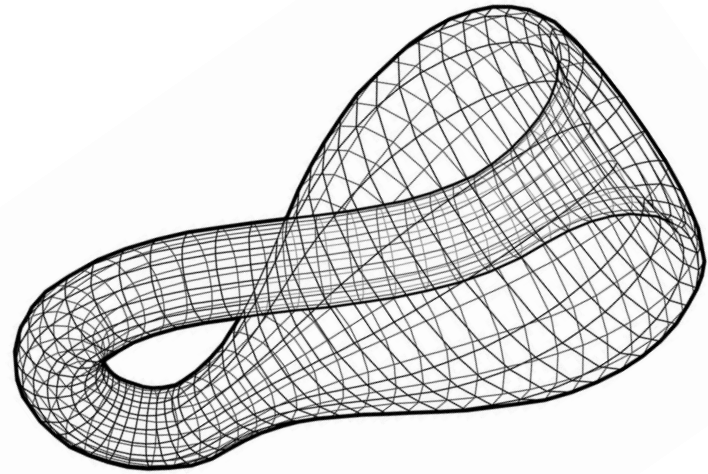
What would you end up with if you cut all the way around a Mobius strip, staying one third of the way in from the right side?

Understanding different parts and building up a picture of how the interconnect is SYSTEMS THINKING

What happens when you join things together?

Joining two Mobius strips creates a 3D shape with only one surface – it's called a [Klein bottle](#)

Key Points of Systems Thinking

1. Everything is connected to everything else

2. You can never do just one thing

3. Changing from "either/or" thinking to "both/and"

4. There is no "away" to throw things to

5. The map is not the territory

To reflect on...

'No Man is an Island' by John Donne

**No man is an island entire of itself; every man is a piece of the continent, a part of the main; if a clod be washed away by the sea, Europe is the less, as well as if a promontory were, as well as any manner of thy friends or of thine own were; any man's death diminishes me, because I am involved in mankind.
And therefore never send to know for whom the bell tolls; it tolls for thee.**