Making Maths Matter with TurtleStitch

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Geometry – properties of shapes

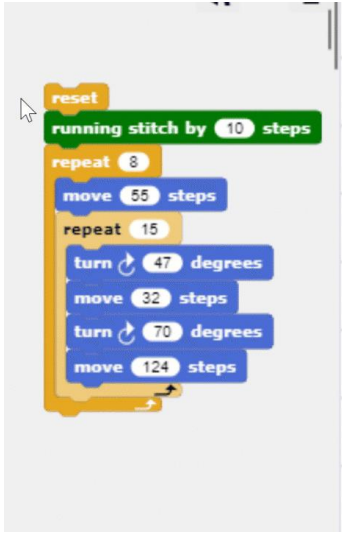
Statutory requirements

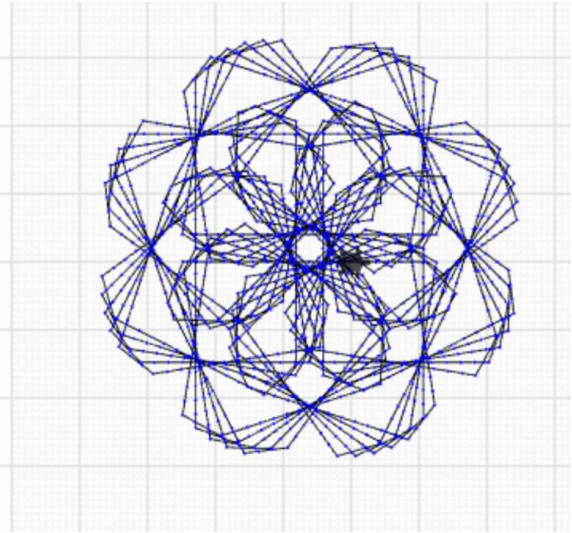
Pupils should be taught to:

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees (^{o})
- identify:
  - angles at a point and one whole turn (total 360^{o})
  - angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180^{o})
  - other multiples of 90^{o}
- use the properties of rectangles to deduce related facts and find missing lengths and angles
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

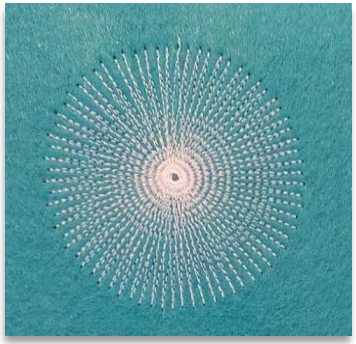
Year 6 UK Maths Curriculum – Geometry (10-11)

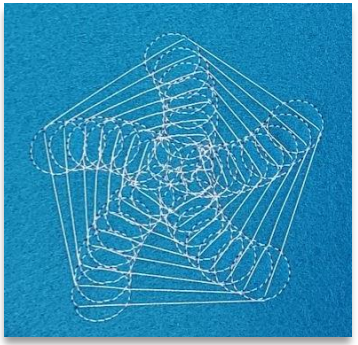
Introducing TurtleStitch: www.turtlestitch.org

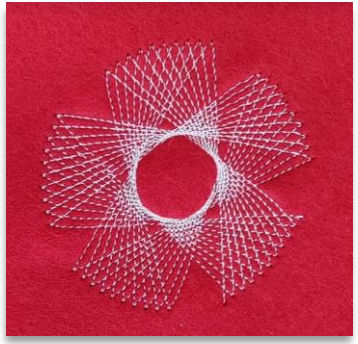
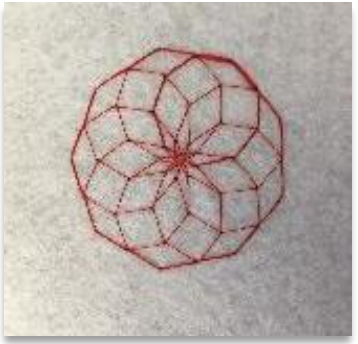




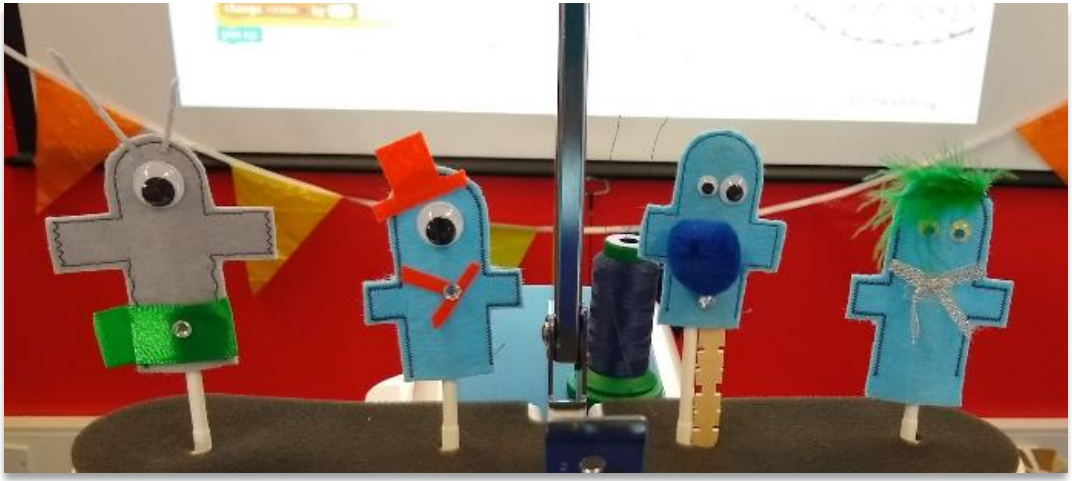
Our resources: warwick.ac.uk/turtlestitch






Examples of work (ages 9 – 11)



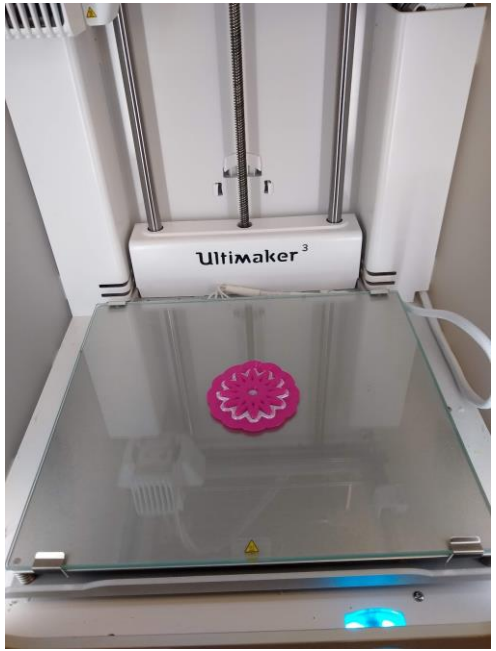

WMG


MJL

Accessible Manufacturing

Resources: warwick.ac.uk/turtlestitch

Accessible Manufacturing



←1 hour

5 minutes →

Resources: warwick.ac.uk/turtlestitch

Careers

in software and control

Resources: warwick.ac.uk/turtlestitch

Pattern design

"the resurrection of Coventry after the Blitz"

"a spinning football"

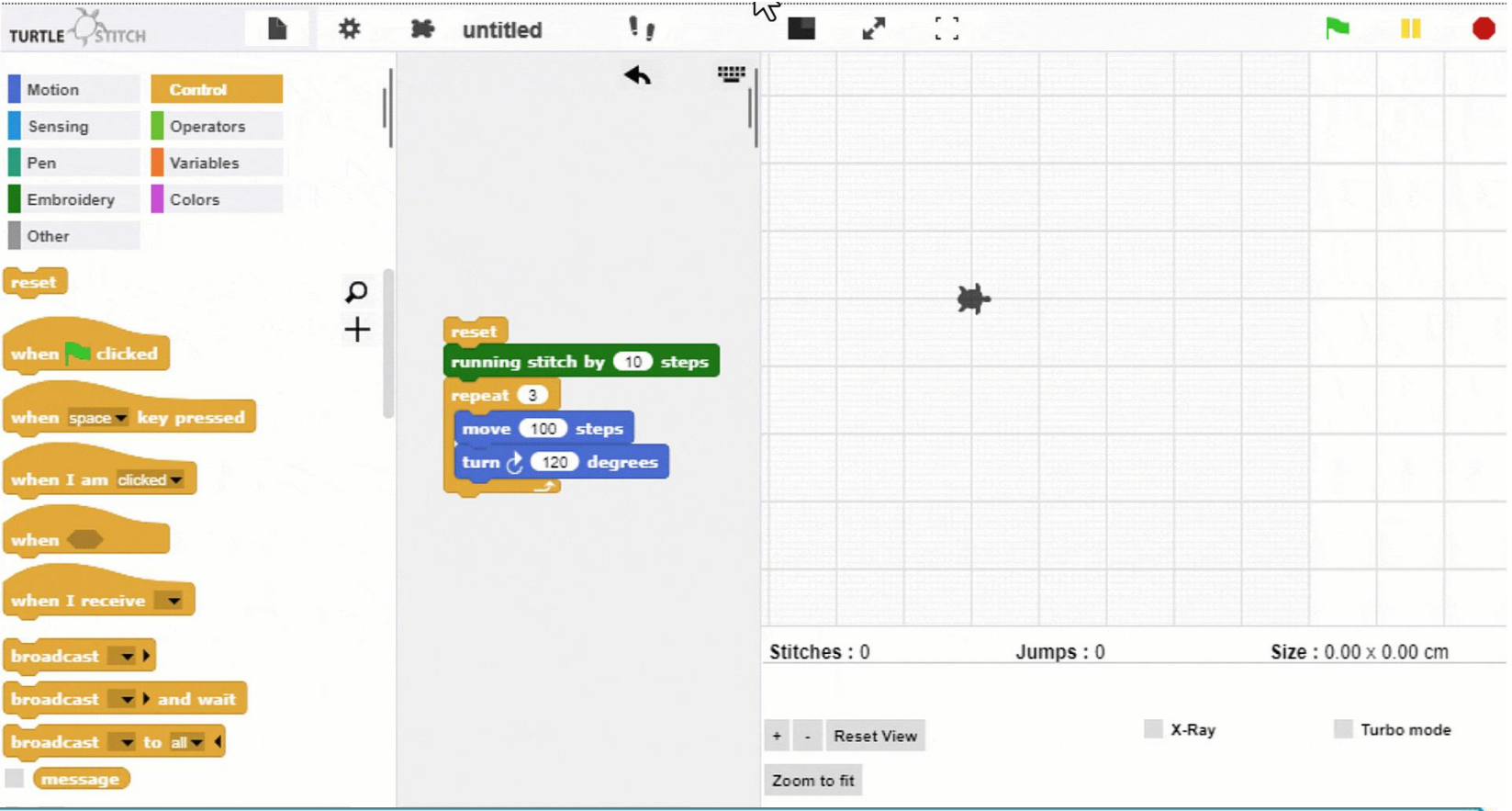
"bicycle wheels"

"pineapple designs when we were looking at the historic images"

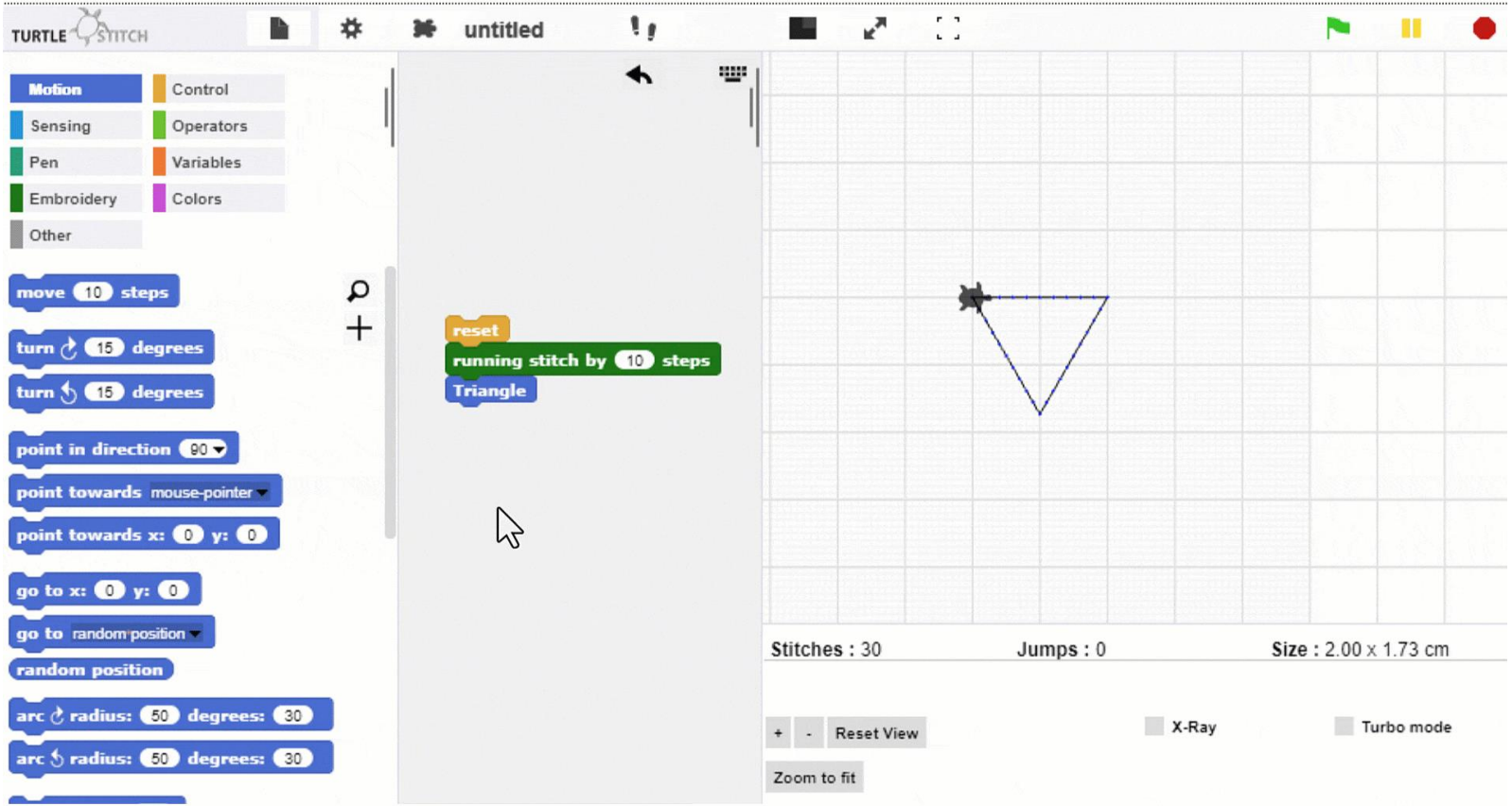
"ribbons manufacturing"

"intertwined circles to represent all people of different cultures who came together as citizens of our multicultural city"

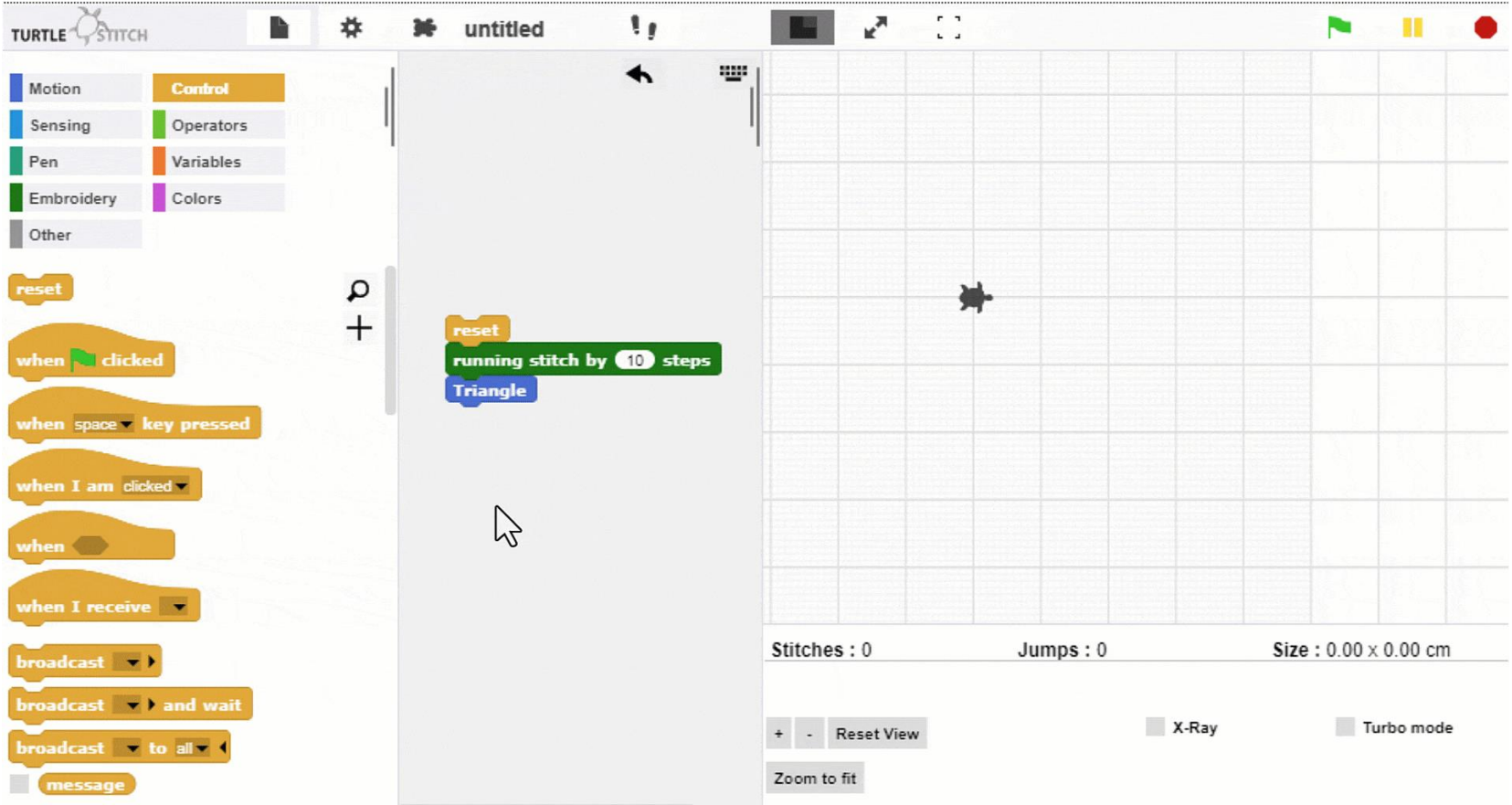
Introducing Turtle Geometry: Create a closed shape



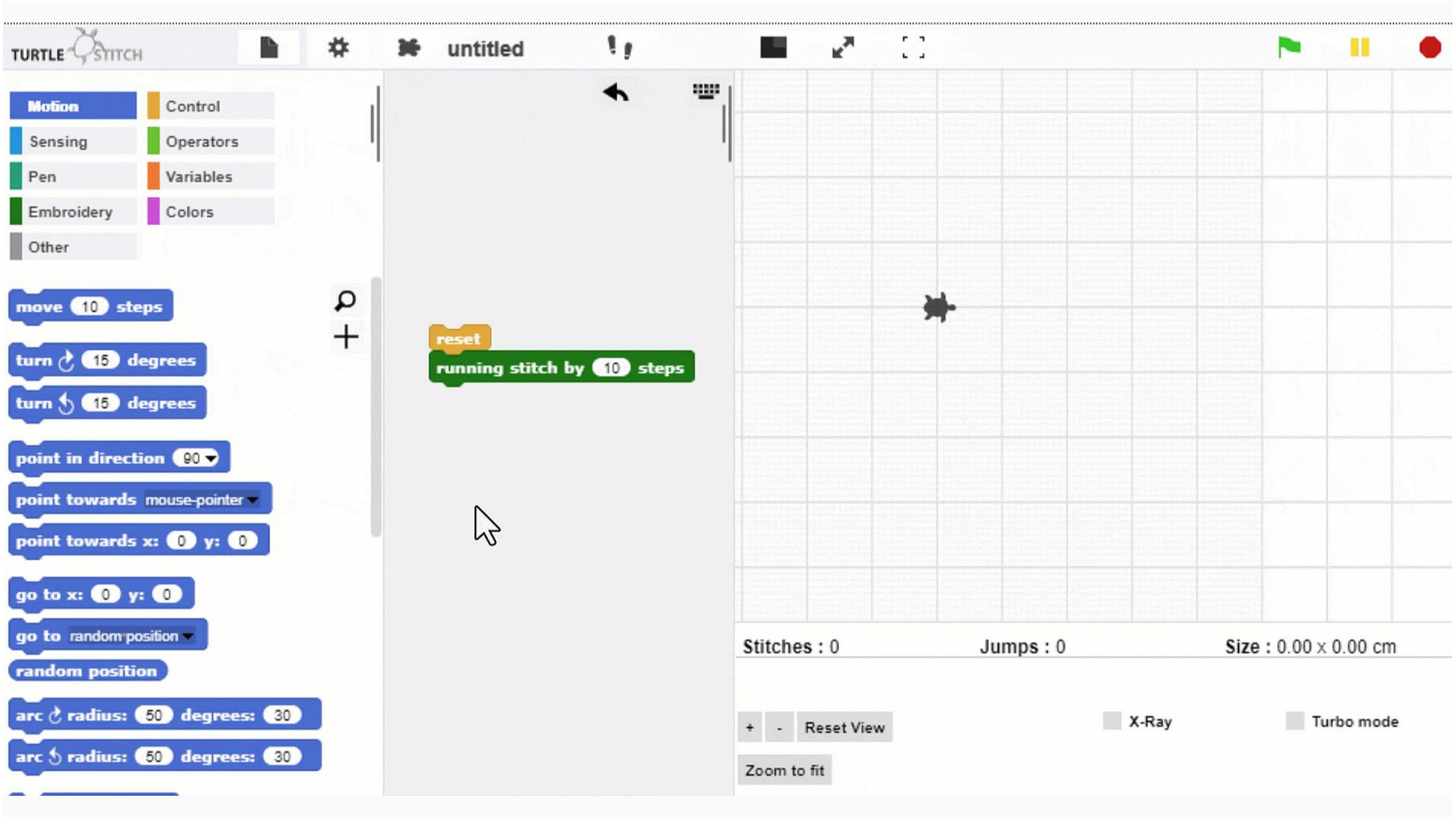
Teaching the Turtle a new word



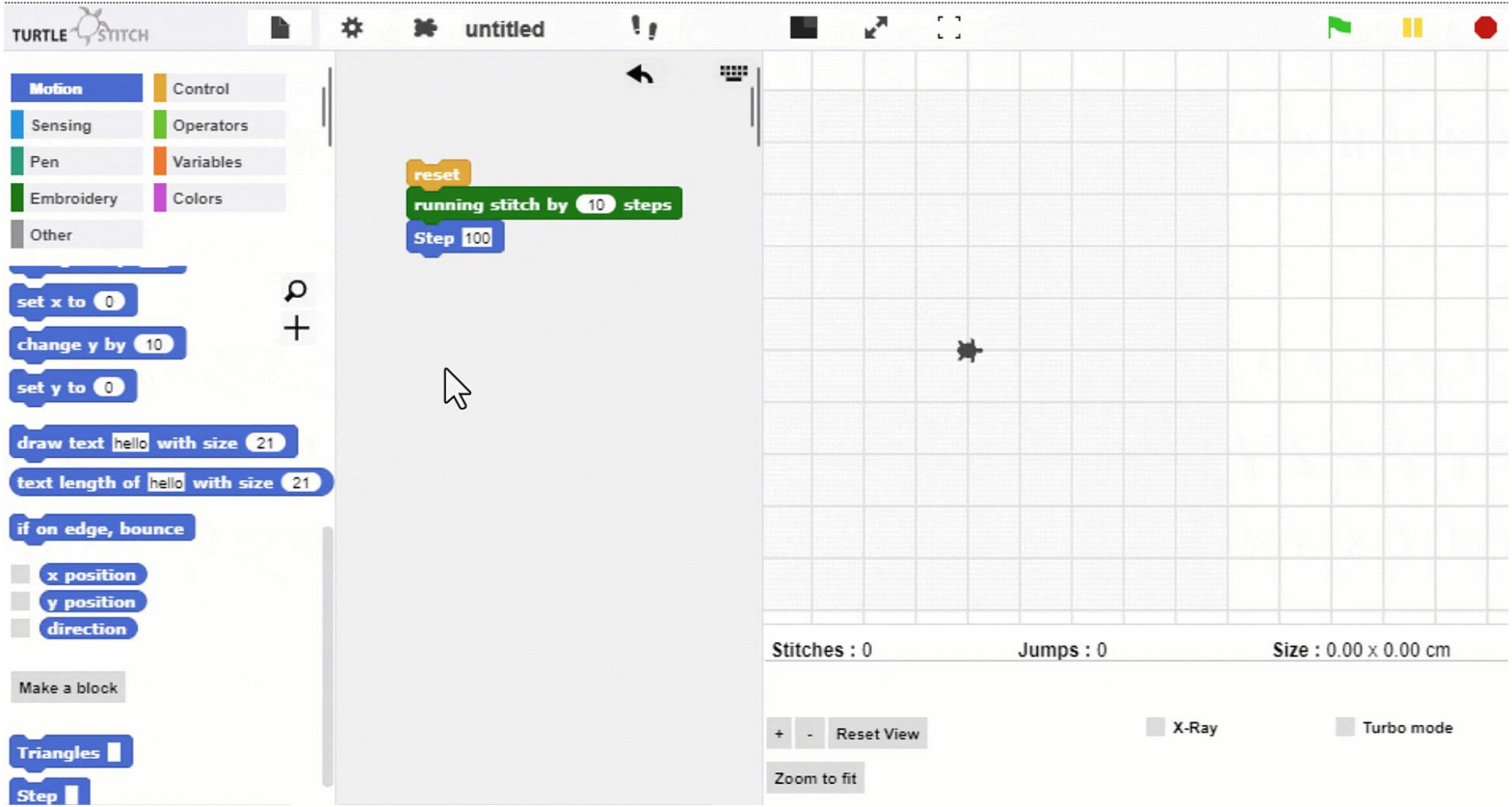
Introducing parameters: little and large



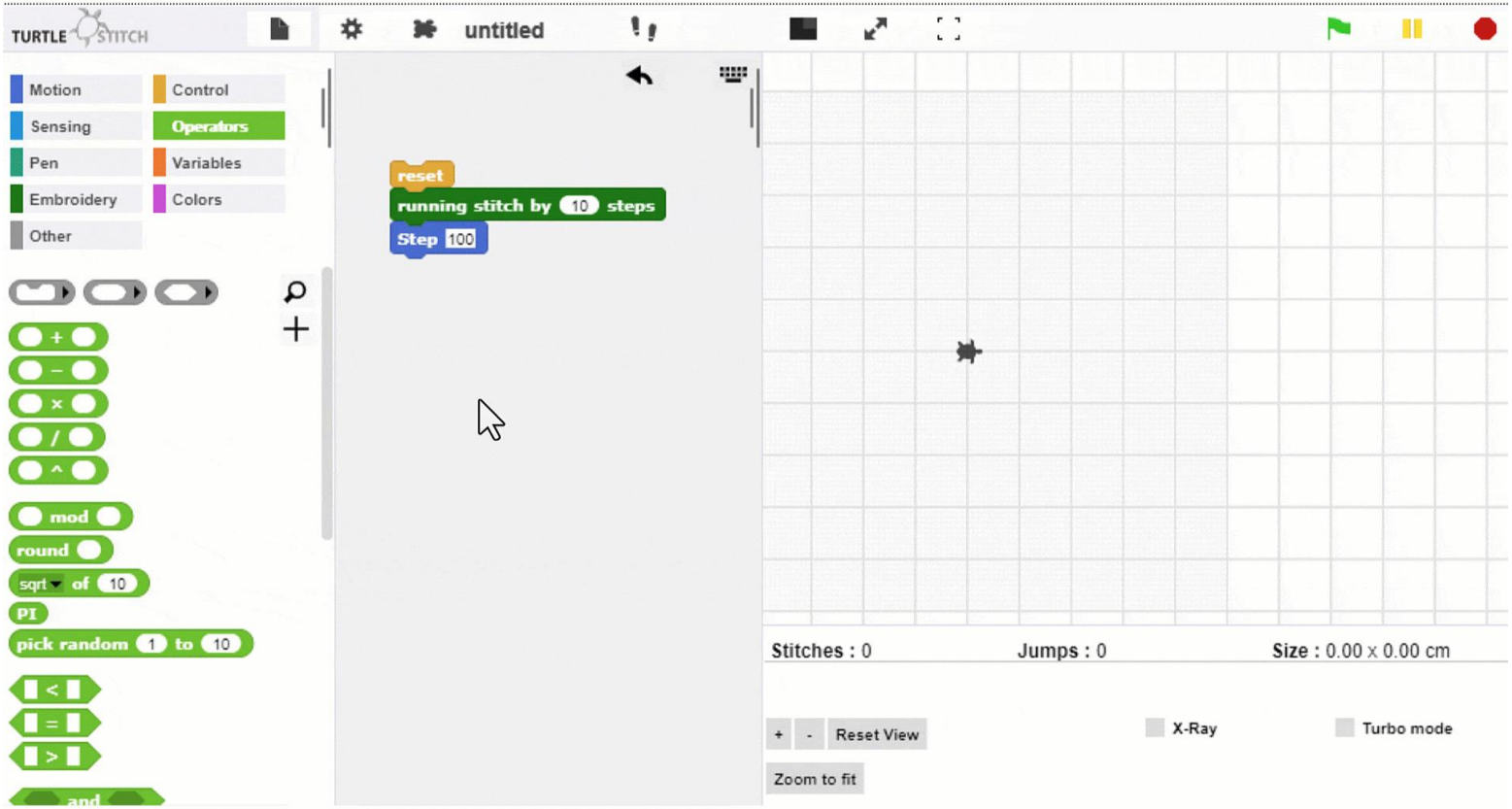
Going for a spin



Recursion – first create Step block



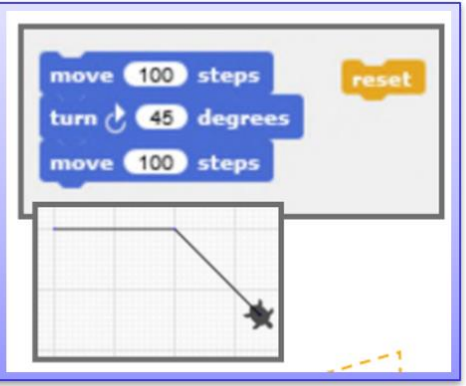
Recursion – Step Larger



Recursion – introduce end condition

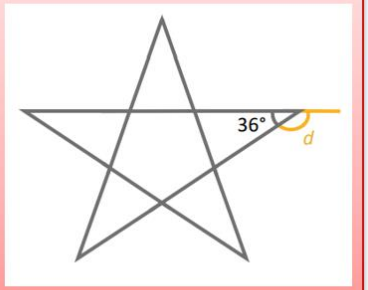
Basic Skills

- Getting started
- Creating Patterns
- Build a block
- Parameters/ Variables
- Shapes



Maths (years 5 and 6)

- Calculate missing angles
- Properties of shapes
- Highest Common Factor
- Using variables
- Coordinates
- Lesson Plans for teachers

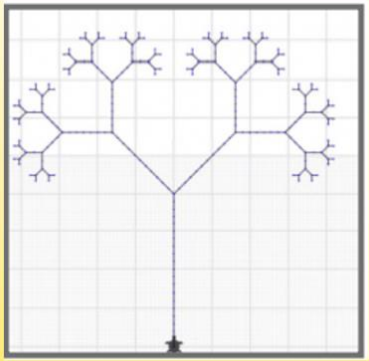


Projects

- Coasters
- Finger puppets
- Key rings
- Light/lamp panels

Investigations

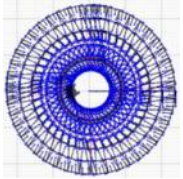
- Recursion
- Spin patterns



warwick.ac.uk/turtlestitch

Motivation

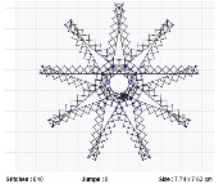
"resilience to keep going when their ideas didn't quite work as expected"

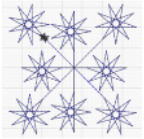


"excited by the prospect of seeing their work on a computer turn into something 'real'."

"enjoyed applying mathematical thinking to a practical activity"

"to use an applied computing skill was inspiring for our children"





"several children were inspired to try Turtlestitch for themselves at home and come back to school with even more developed design ideas."

"motivated to experiment with programming skills, review and refine their work."

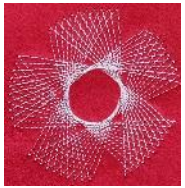
Skills

"co-operating and taking turns"

"problem-solving skills improved"

“Having the planning done for us... helped us to feel confident with delivering the project... knowledge I can use again when I’m teaching KS2 [ages 9-11] next year.”

“I found out I was more resilient than I had thought.”



“When you mess up you just don’t get frustrated you try again.”

"applying mathematical thinking to a practical activity"

Stitch in Time: programming + textiles + culture

www.warwick.ac.uk/stitchintime