

Learning objective: we are learning to calculate missing angles on a straight line.

Context

Turtlestitch is a free, easy-to-use platform found at www.turtlestitch.org. Using block-based code similar to Scratch and Snap!, it is designed for writing programs to control embroidery machines, but you don't need an embroidery machine in school to get a lot of fun learning from it. It is particularly useful for cross-curricular learning in computing and maths. Using WMG's [free maths resources](#), year 5 and 6 children can apply their understanding in topics such as measure, geometry, division, and position and direction to create patterns onscreen.

Preparation

Before the lesson, familiarise yourself with Turtlestitch using these video tutorials:

[Getting started](#) (7 minutes) [Saving your file](#) (3 minutes) [Displaying your design](#) (3 minutes)

Familiarise yourself with the maths sheets: [questions](#) and [answers](#). The children can access these online.

For a printable version, [click here](#) and set your printer to print landscape on both sides and flip on short edge.

Select pages 1 and 2 for printing.

Timing	Teaching & learning	Resources
5 minutes	Introduction Play this video explaining where software and control is used.	Introduction video
10 minutes	Basic use of Turtlestitch Show the children how to use the basic functions of Turtlestitch, which you have learnt from the 'getting started' video (see preparation above). Give them time to experiment with Turtlestitch.	www.turtlestitch.org
5 minutes	Maths re-cap Introduce or re-cap the fact that angles on a straight line add up to 180°. Practise subtracting from 180 to calculate the value of a missing angle.	Whiteboard
15 minutes	Making shapes with Turtlestitch Using the question sheet, children work through the questions to create different shapes on Turtlestitch. Tell them to leave the code for each shape on the screen, to use later.	Questions Answers
10 minutes	Making your own Turtlestitch block Play this video on making your own block, or watch it beforehand and teach the method yourself. The children make blocks for all of the shapes they made earlier.	Making a block video
10 minutes	Making patterns Play this video from 1:25 onwards. Practise dividing 360 by other numbers. The children make patterns using their shape blocks. Can they work out how to fit different shapes into the pattern?	Pattern video Whiteboard
5 minutes	Showcase The children show each other their patterns.	