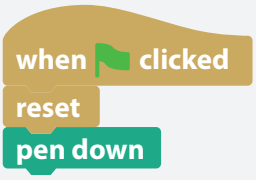
START

The most important blocks are:



← "Green Flag" marks the start of the code and executes it when clicked.

← "Reset" clears the stage and sets the pen back to the default position, very useful when you re-run a pattern while testing it.

← "Pen down" starts the process of drawing / stitching

Now you can start designing your pattern.
Examples are on the other cards.

Design issues:

Not everything that can be coded can be stitched.
Try to avoid too many stitches on the same spot,
the fabric might tear.

Don't forget to think about stitch length.
You can experiment with stitch length when you refer to card "line".

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TURTLE STITCH
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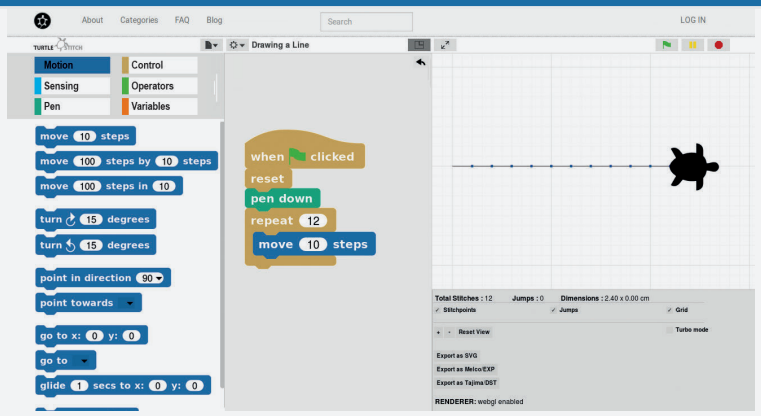
START

Here is an overview of the interface of the Turtlestitch tool.



On the left is the "**palette**" where you find the blocks to code.
In the middle is the "**scripting area**". Place the blocks here to code.
See the card "**line**" reference to this code example.
On the upper right is the "**stage**" where you see the pattern you coded.
On the lower right, there are the options for the stage and for exporting your pattern so that you can save it on a USB drive and load it into the stitching machine.

TURTLE STITCH
turtlestitch.org

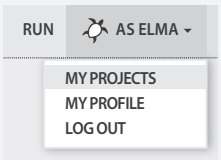
"SIGN UP" AND SHARE

YOU can:

→ To sign up, choose a unique username, an email address and a secure password..

→ Work without registration and save your designs locally.

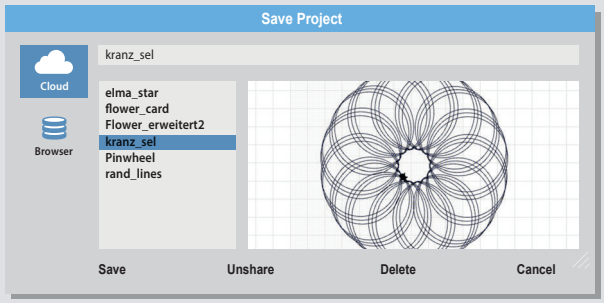
Being registered allows you to manage your patterns online and to share them. You can "**like**" and comment on other users' patterns. Signing up is about becoming part of the community.



Share/Unshare your code:

You can do it under
www.turtlestitch.org/myprojects

Or from within Turtlestitch: File → Save as



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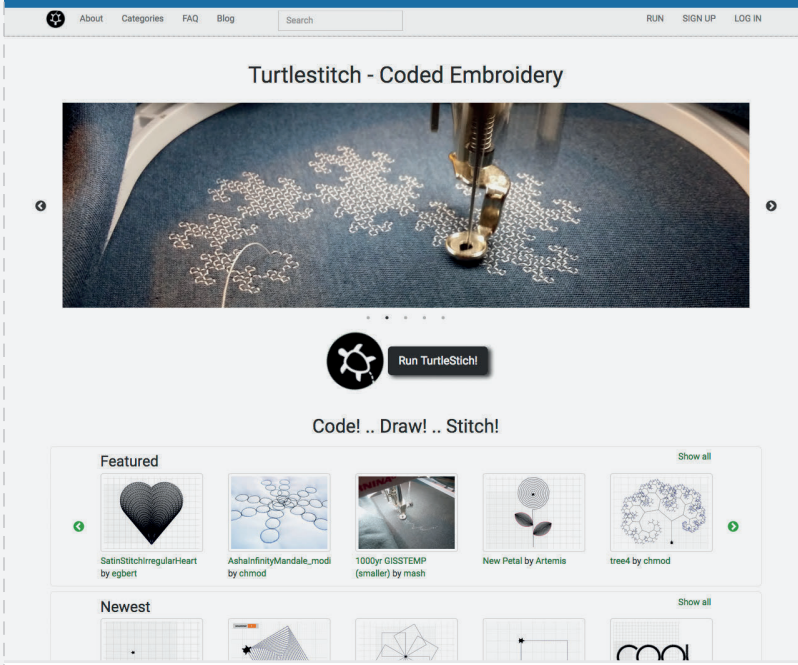
"SIGN UP" AND SHARE

In Turtlestitch you can register, but you don't have to.



TURTLE STITCH
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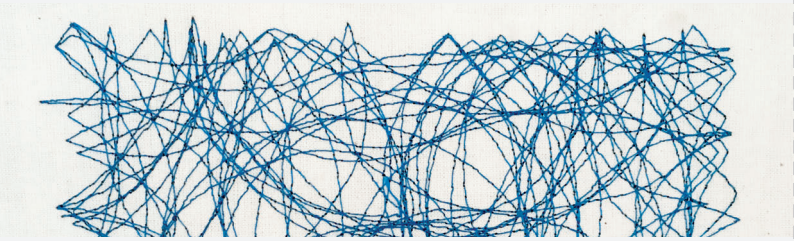
FILE FORMATS

You can and should export and import blocks.

Refer to card “**Make a block**”.

The blocks are not saved online across sessions.
The file format for blocks is also .**xml**

To save your block: **File** → **Export blocks…**
To import your block: **File** → **Import…**



The file formats TurtleStitch currently supports for the embroidery patterns are named **.dst** and **.exp**.

To export them use:

File → **Export as Tajima/DST** or **File** → **Export as Melco/EXP.**

Usually you save them to a USB-Stick which you connect to an embroidery machine in a next step. Follow the instructions of your machine to load and process the embroidery patterns.

If your machine does not support these formats,
you need to convert the files.

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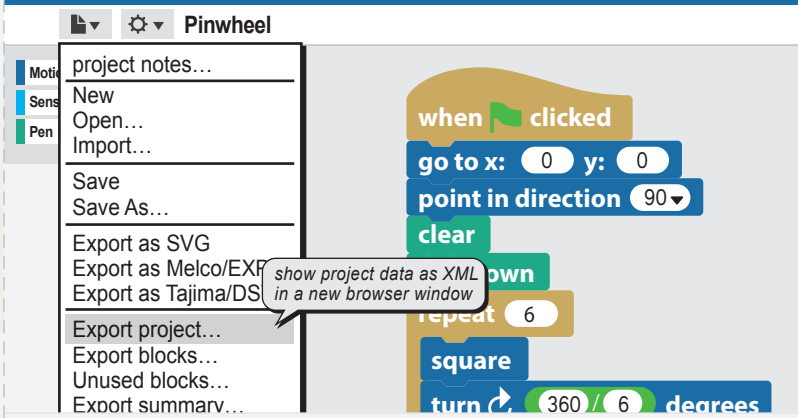
FILE FORMATS

Here, we will learn about the different file formats.



You can save your code by selecting **File** → **Export project…**
The name of the File Format for Projects is **.xml**
E.g. in this case Pinwheel.xml

If you want to open a code from your hard drive use **File** → **Import…** and select the projectname (e.g Pinwheel.xml) from the directory your Projects are saved.

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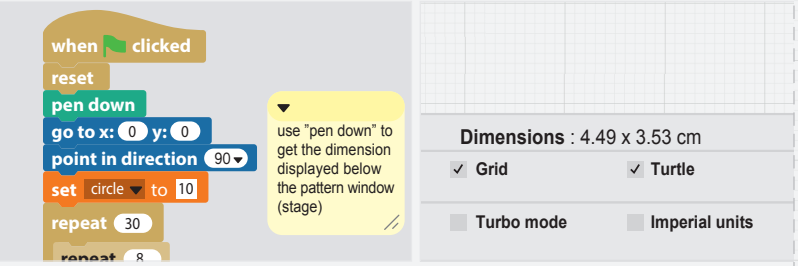
DIMENSIONS

Every embroidery machine has a limited embroidery area.

Some are bigger than others, but you always need know the the size of your pattern to make sure it fits the area you have.

You can use the “**pen down**” block to get the dimensions (size) of your pattern calculated and displayed.



Default is metric units (cm), but you can can check the **Imperial Units** switch to get the size of the pattern in inches.

Additionally the grid in the pattern window helps you to get a feeling for the size too.

It is important to think about the size of a pattern right from the beginning, because a scaling for embroideries are tricky.
Can you imagine why? (hint: stitch density)

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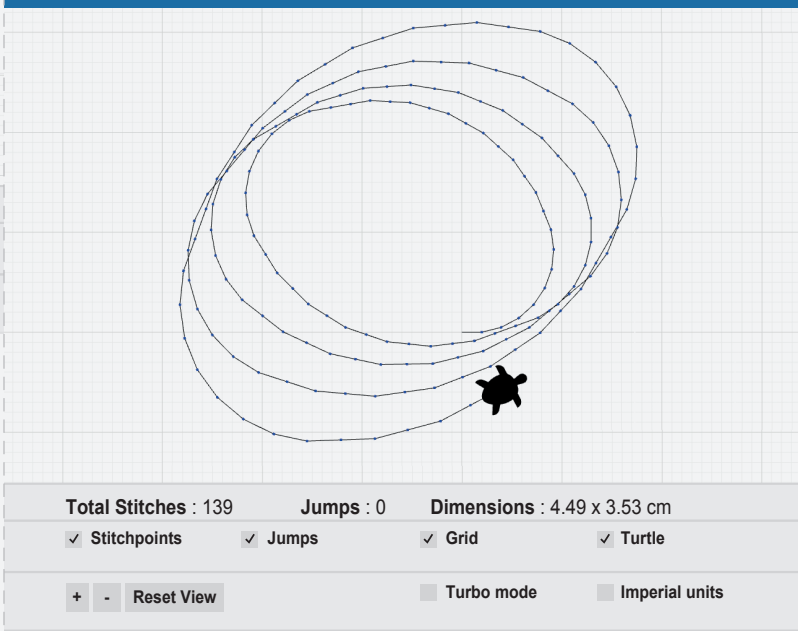
DIMENSIONS

Here you will learn how to deal with dimensions (size) of your designed pattern.



TURTLE STITCH
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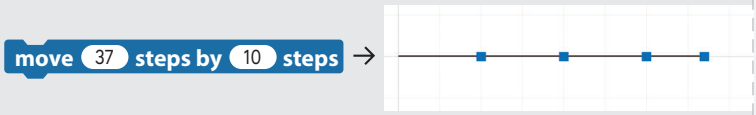
"MOVE" (STITCH LENGTH) BLOCKS

Let's look into the blocks a bit more:

This block makes one stitch of 10 steps (2mm)



This block makes 3 stitches of a distance of 10 steps each and an extra stitch a distance of 7 steps since 37:10 = 3 remainder 7

**Note: not all stitches will be of equal length with this block.
The remainder will be the shorter stitch at the end of the total distance.

This block makes 3 equal length stitches within a distance of 37 steps.

**Note: Each stitch will be of equal length.

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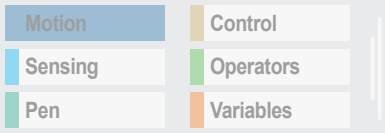
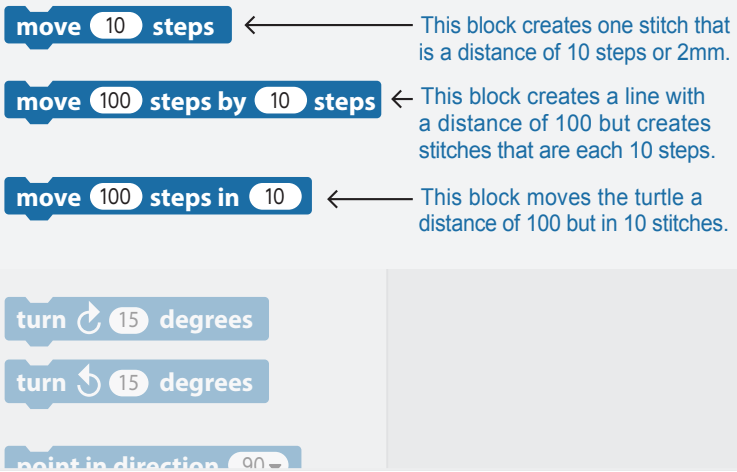
"MOVE" (STITCH LENGTH) BLOCKS

In this card, we will learn about the different move blocks.





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COMMENT

Right click the area next to the code for the popup to appear and select "**add comment**".

Type in your comment.

By moving it over a block, you can connect it to a specific block.

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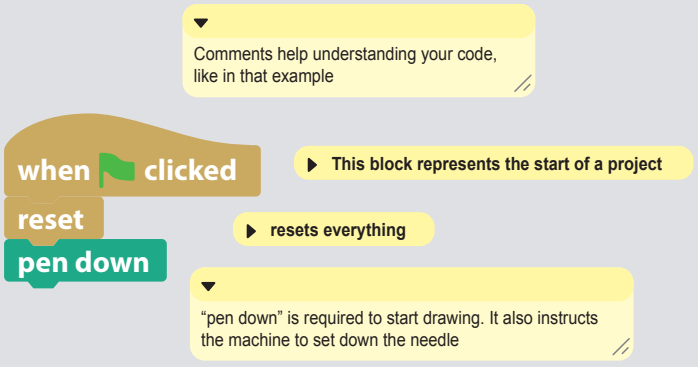
COMMENT

Now, we will learn to add a comment to our code.



What adding a comment to a code does:

- → Helps explain the code
- → Helps others understand the blocks and the purpose in the code

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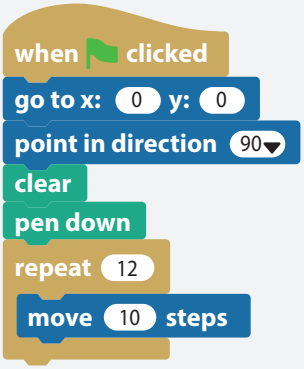
LINE

This example shows you
how to draw a line of 24 mm (~1 inch) length



← The first three blocks put the cursor back to the (0,0) position, set the direction and clear the stage.

← Use "pen down" to draw.

← “Repeat” repeats the blocks inside a certain number of times.

← ”Move 10 steps“ to define the length of a single stitch.

The number of steps determines the size of the individual stitch.
10 steps = 2 mm stitch
20 steps = 4 mm stitch

Feel free to experiment!

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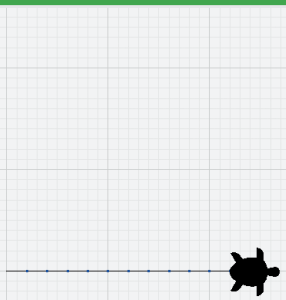
LINE

Now we will stitch a line.
Follow the steps and try to make your own copy of the code!



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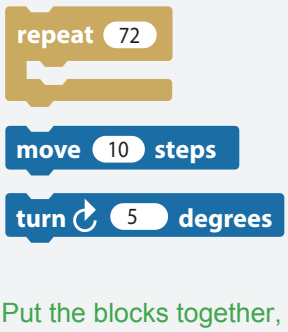
CIRCLE

Blocks Needed:

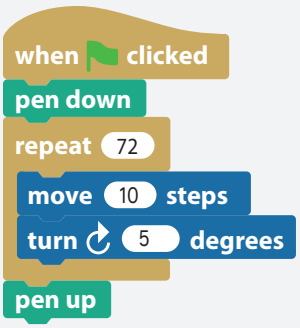


← The block ”Repeat“ repeats the blocks inside 72 times.

← This block directs the turtle to move forward, making a stitch.

← This block turns the turtle clockwise, the specified number of degrees.

Put the blocks together, run the code, and we just stitched a circle!



For a smaler circle decrease the number of repeats and set turn to **360 / (number of repeats)**.

Ex: set repeat to 36 and
set turn to 10 degrees.

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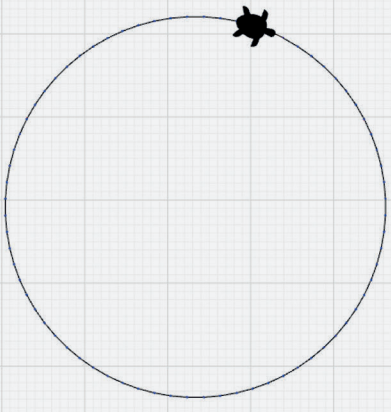
CIRCLE

Let‘s stitch a circle now.
Follow the steps and try to make your own copy of the code!



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SQUARE

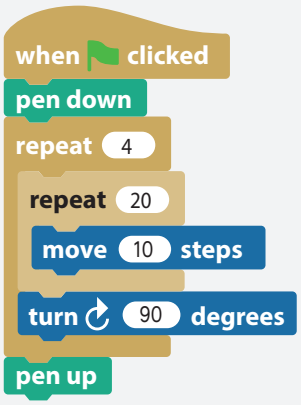
Blocks Needed:

← "Repeat" repeats the blocks inside a certain number of times.

← "Move" moves the turtle forward a certain number of steps.

← "Turn" turns the turtle a certain number of degrees in the direction of the arrow.

Put the blocks together, run the code, and we just stitched a square!



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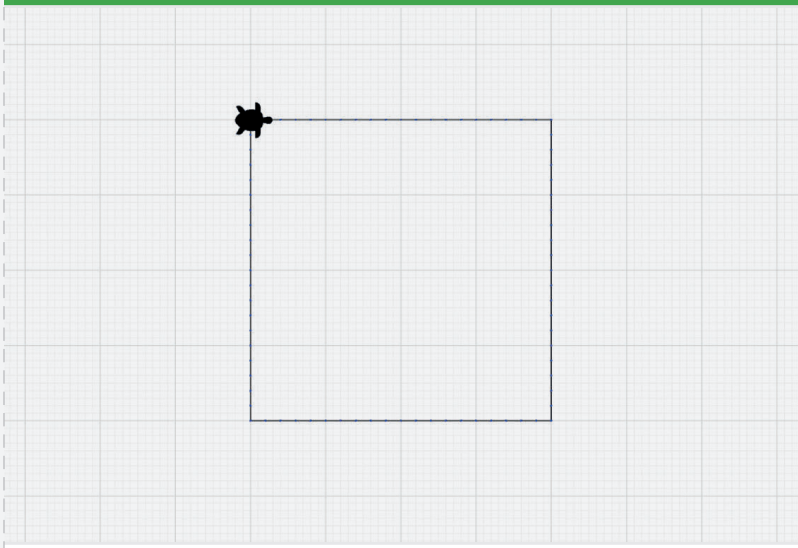
SQUARE

Now, we will stitch a square.
Follow the steps and try to make your own copy of the code!



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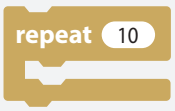
PINWHEEL

Blocks Needed:



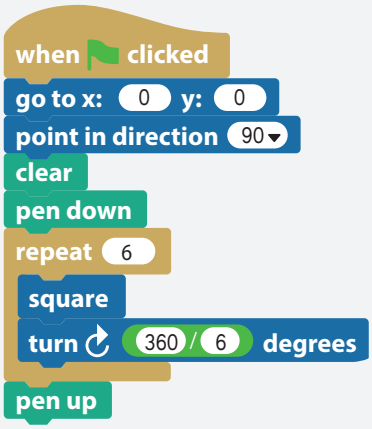
← "Repeat" repeats the blocks inside a certain number of times.

← Insert a block to make the squares. Refer to cards "**Block**" and "**Square**".

← "Turn" turns the turtle a certain number of degrees in the direction of the arrow.

← This operator block divides inputs.

Put the blocks together, run the code, and we just stitched a pinwheel!



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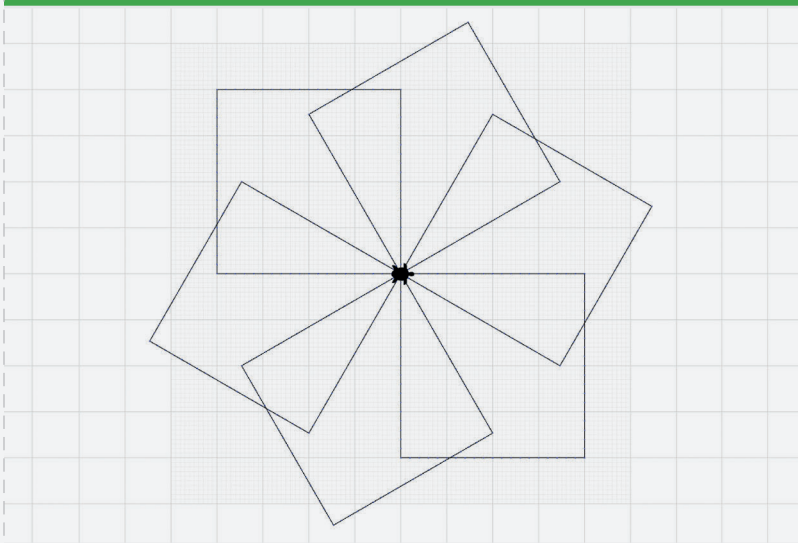
PINWHEEL

Now, we will stitch a pinwheel from squares.
Follow the steps and try to make your own copy of the code!



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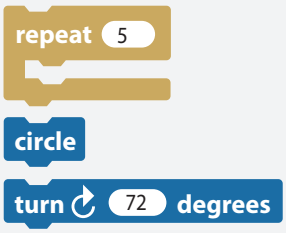
FLOWER

Blocks Needed:

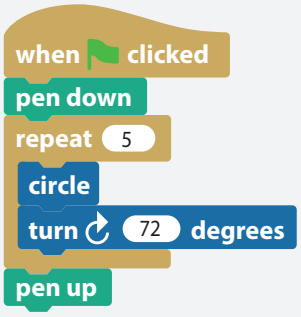


← "Repeat" repeats the blocks inside a certain number of times.

← Insert a block to make the circle. Refer to cards "**Block**" and "**Circle**".

← "Turn" turns the turtle a certain number of degrees in the direction of the arrow.

Put the blocks together, run the code, and we just stitched a flower!



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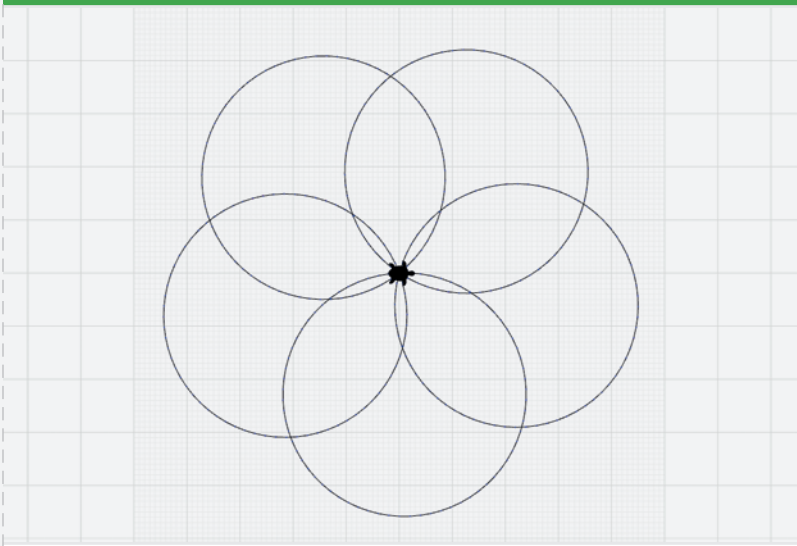
FLOWER

Now, we will stitch a simple flower from circles.
Follow the steps and try to make your own copy of the code!



TURTLE STITCH
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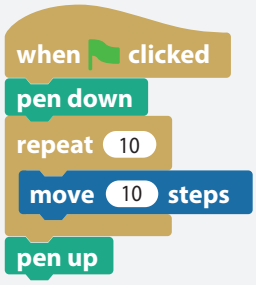
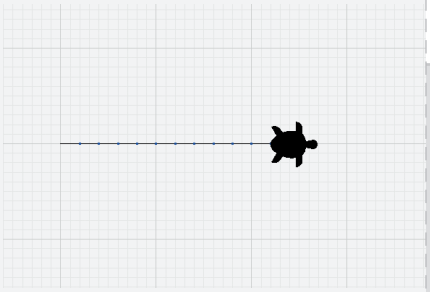
RESET

What the block “reset” does:

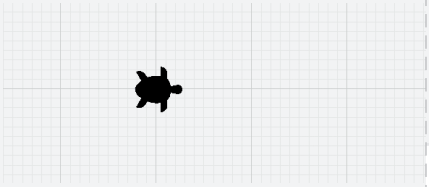
→ Goes to (0,0)
→ Points in direction (90) right
→ Clears the stage
This block moves the turtle back to the default setting

Example





If you want to clear the stage or made a mistake in the code, use the block “reset”:



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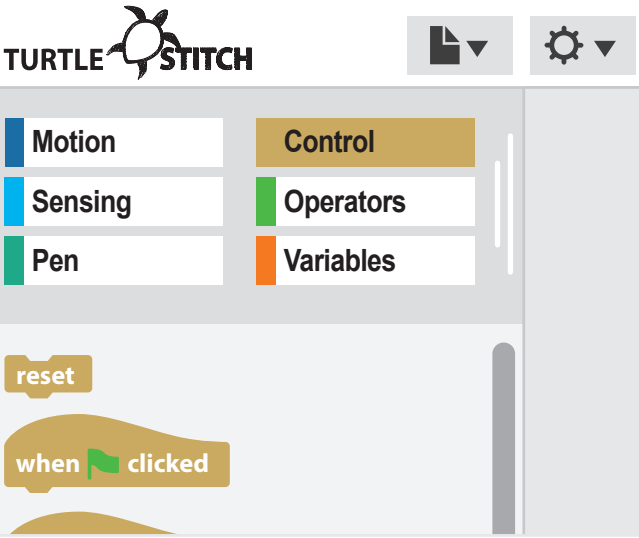
RESET

Now, we will learn about the “reset” block.



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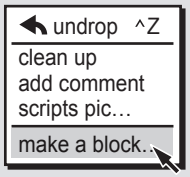
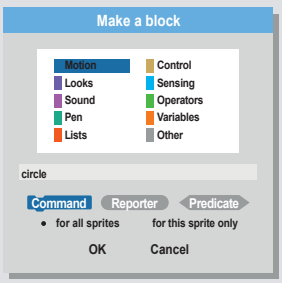
BLOCK

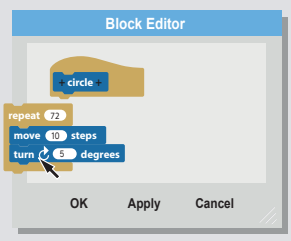
Steps Needed:



← Ctrl+click, right click or Alt+click the scripting area and click “make a block...”



← Choose the palette (in this case the “Motion” palette) your block is fitting in, it’s specific type (Command) and label it, by typing in “circle“.



← Program your custom block by adding the blocks you want to use in the block editor. In this case, use the “Circle“ card for reference.

Your custom block will now appear at the bottom of the palette/color menu you chose.

Congratulations!

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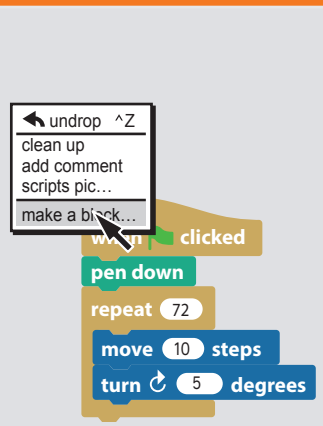
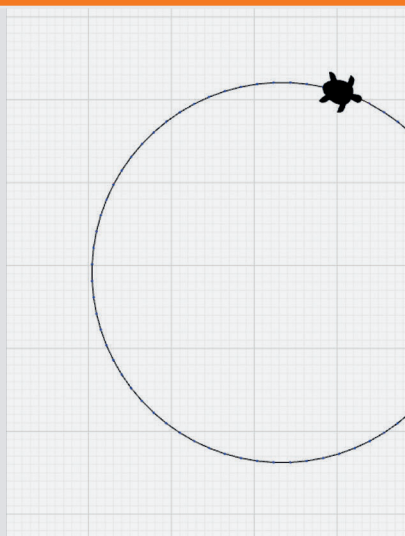
BLOCK

Now, let’s make a block. A block is a great tool to simplify your code, especially when you want to use something repeatedly. In this example we define a block named “circle”.





TURTLE STITCH
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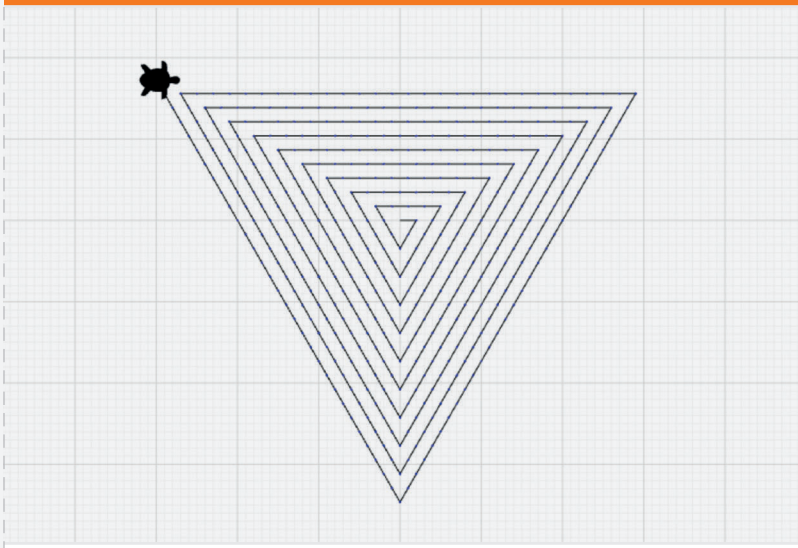
TRIANGLE SPIRAL

In this tutorial, we will stitch a triangle spiral. Starting from the middle, each line of the triangle extends outward by one stitch. By creating this spiral, you'll learn about the powerful concept of Variables!



TURTLE STITCH
turtlestitch.org

Start by selecting these code blocks from the Control, Pen, and Motion palettes:

→ These are the starting and reset commands from the Control palette.

→ In TurtleStitch, "pen down" stands for "needle down."

→ "Repeat" in this case, will repeat the number of straight lines in the spiral.

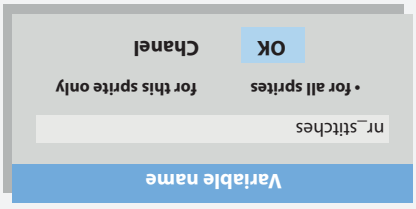
(We'll define the repeat Variable below)

→ "Move 10 steps" means to move one single stitch.

→ "Turn 120 degrees" creates the corners of an equilateral triangle (a triangle whose sides are all the same length).

Now make your Variable!

→ In the **Variables** palette, click on "Make a variable" and give it a name.



You must indicate which Variable this command will affect by selecting the down arrow and selecting your Variable from the list.

→ "Change by 1" (also found in the Variables palette) changes the value of a Variable on a repeat.

→ "Set to 0" (found in the Variables palette) defines the initial value of a Variable.

We need two more commands to make our Variable work.

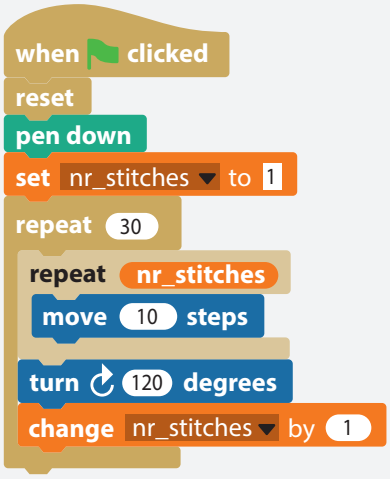
→ In the palettes, drag your new Variable from the list to the empty "repeat" code block. This Variable will define the number of stitches per straight line.

→ The "turn 120 degrees" block is the turn after each straight line.

You can find your new variable listed in the Variables palette. Click or unclick the checkbox next to the Variable to either show or hide it on the stage.

TRIANGLE SPIRAL

Next, arrange your code blocks in the correct order and test your code!
You can experiment by:



→ Changing the degrees in the "turn" command by one or two (e.g.: 118 or 121).

→ Changing the number of stitches in the Variable you created by a small amount.

Congratulations on making your first Variable!

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