

**FORWARD, BACKWARD, LEFT, RIGHT, FRESH**

This is the turtle. It can draw lines on the screen.

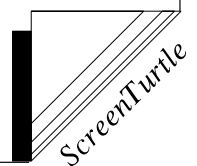
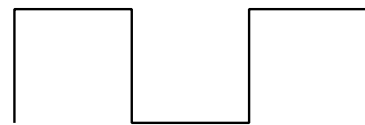
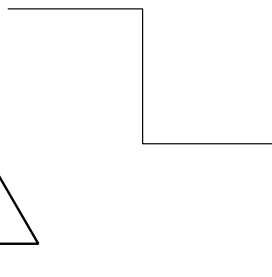
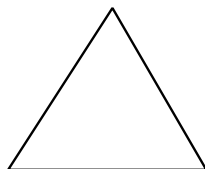
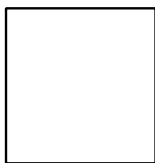
You can move the turtle around the screen. One of the words you can use to do this is: FORWARD. FORWARD needs a number, like this. Remember to press <Return> after the number!

**FORWARD 100**

You can turn the turtle by typing LEFT or RIGHT. Type LEFT 90, and then press <Return>. The turtle is still in the same place, but it has turned!

Type BACKWARD 200 and press <Return>. Now type FRESH <Return>. What does FRESH do?

Now try drawing these shapes and patterns:



## UNDO, PENUP, PENDOWN, PENCOLOUR

Here are some new commands to try:

**UNDO**

This will undo the last thing you did!

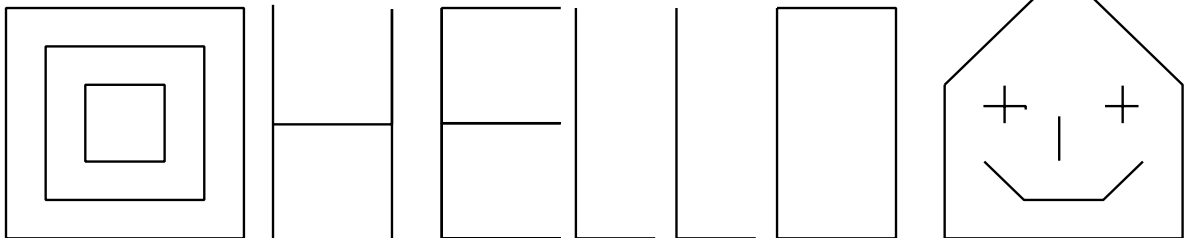
**PENUP**

This command stops the turtle drawing. This is how you move around the screen without drawing.

**PENDOWN**

This command makes the turtle draw again.

Now try drawing these:



Try writing your name, or your school's name.

You can draw in different colours. Try this:

**PENCOLOUR RED**

Now draw something of your own. Find out ScreenTurtle's other colours.



**FILL, PAINT, LABEL and TYPE**

Colouring with the turtle! Draw a shape. Make sure that the outline joins up. Move the turtle into the shape, making sure the back of the turtle is inside the shape. Type FILL. The shape will fill with whatever colour the pen is. To get a different colour, use PENCLOUR.

If your fill covers the whole screen instead of just your shape, that's because there was a gap in the outline of your shape. Just type UNDO, and try again.

Colouring with the mouse! Draw another shape, then type PAINT. You'll see a colour menu. Click on the colour you want, point at the shape you want to fill, then click. You can go back if you want, and click on another colour and fill with that. When you have finished, click on OK or Finished.

Putting words on the screen! Type: LABEL Hello there!  
Your words will appear on the screen just behind the turtle.  
Type: TYPE  
Now type Clever stuff!! I can put my words on the screen with the mouse.



## REPEAT and AGAIN

You can get ScreenTurtle to do a lot of the hard work for you. Think about how you draw a square:

```
FORWARD 200
LEFT 90
FORWARD 200
LEFT 90
FORWARD 200
LEFT 90
FORWARD 200
LEFT 90
```

This makes ScreenTurtle go FD 200 LT 90 four times.

Here's a quicker way:

```
REPEAT 4
>FORWARD 200
>RIGHT 90
>AGAIN
```

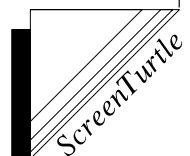
This is called a loop. It makes ScreenTurtle do FD 200 RT 90 four times. You must put REPEAT (with a number) at the start, and AGAIN at the end. ScreenTurtle puts a > next to your word to remind you that you are repeating. You don't have to type the >.

You can put repeats inside repeats. Try this:

```
REPEAT 36
>LEFT 10
>FORWARD 10
>REPEAT 4
>>FORWARD 200
>>LEFT 90
>>AGAIN
>AGAIN
```

You need two AGAINs because there are two loops. ScreenTurtle tells you how many loops there are by the number of >s it prints.

Try drawing some regular shapes and patterns.



## DEFINING YOUR OWN WORDS

You can teach ScreenTurtle new words.

Let's start with a square. Type `DEFINE SQUARE`. The screen will change to the Define window. Now type the lines below, pressing `<Return>` after each line. You do not need to type the `>` arrows.

<code>REPEAT 4</code>	As you type, your square will appear on the screen. Click on <code>CLEAR</code> , then <code>RUN</code> . Your square will draw itself again.
<code>&gt;FORWARD 200</code>	
<code>&gt;LEFT 90</code>	
<code>&gt;AGAIN</code>	

You can change the size of your square.

Use the arrow keys or mouse to move the cursor just to the right of the 200. Delete 200 with the `<Delete>` key. Type 300, then click on `Clear` and `Run`. What happens? Now click `Quit` to leave `Define`, then type `SQUARE`. Has ScreenTurtle remembered your word?

You can put words inside words. Try this:

<code>DEFINE PAT</code>	Try changing the numbers in this word, then run it. again. What different patterns can you make?
<code>HIDE TURTLE</code>	
<code>REPEAT 36</code>	You can change your word later by typing <code>EDIT</code> your word, e.g. <code>EDIT PAT</code>
<code>&gt;FORWARD 20</code>	
<code>&gt;LEFT 10</code>	
<code>&gt;SQUARE</code>	
<code>&gt;AGAIN</code>	
<code>SHOW TURTLE</code>	



## DEFINING WORDS WITH VARIABLES

You can add variables to words to make them do more.

Type `DEFINE SQUARE LENGTH`. You will enter the Define window with a new window open called 'Variables'. Set the variable `LENGTH` to 150 in this extra window, then type this in the Define window:

<code>REPEAT 4</code>	This will draw a square with sides 150 units long.
<code>&gt;FORWARD LENGTH</code>	Change the value of <code>LENGTH</code> in the Variables
<code>&gt;LEFT 90</code>	window, and click <code>RUN</code> . What happens?
<code>&gt;AGAIN</code>	

Click the OK button to stop defining, and type `SQUARE 100`. You have taught ScreenTurtle to draw a square of any size!

You can have more than one variable in a word.

Type `DEFINE SHAPE LENGTH,SIDES`. In the Variables window, set `LENGTH` to 150, and `SIDES` to 5. Then type this:

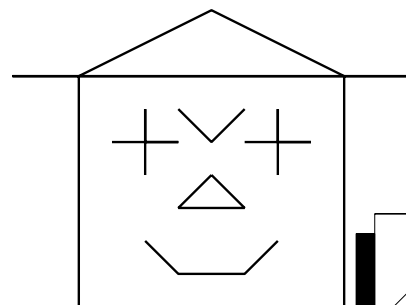
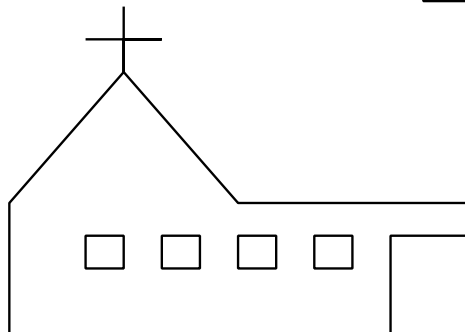
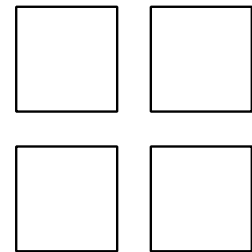
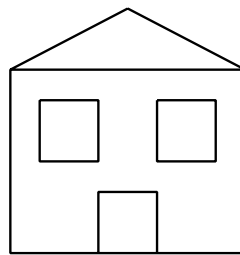
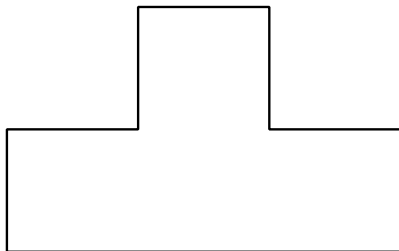
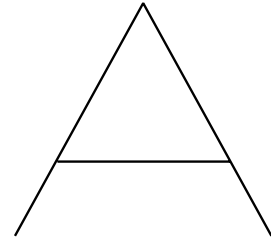
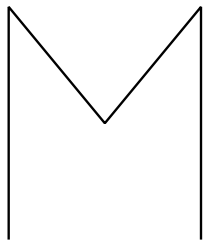
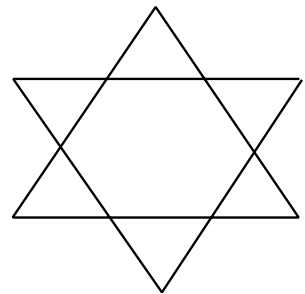
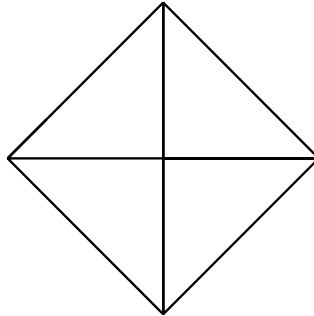
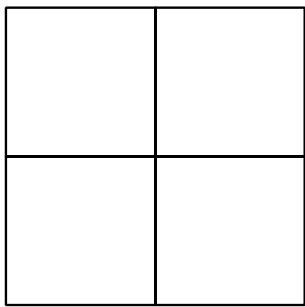
<code>REPEAT SIDES</code>	The third line works out how far to turn the turtle
<code>&gt;FORWARD LENGTH</code>	depending on number of sides in the shape. This will
<code>&gt;LEFT 360/SIDES</code>	draw a pentagon with sides 150 long.
<code>&gt;AGAIN</code>	

Click the OK button then type `SHAPE 200,6`. What happens? What other shapes can you draw? As you increase the number of sides, what must you do to `LENGTH` to keep all of your shape on screen?

Can you add a variable to `SHAPE` to change the colour?



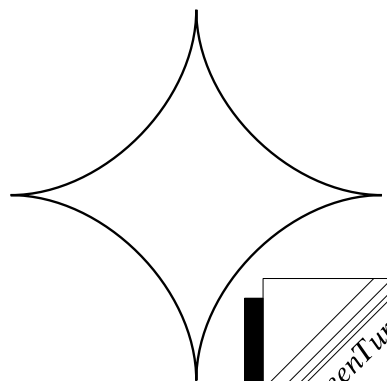
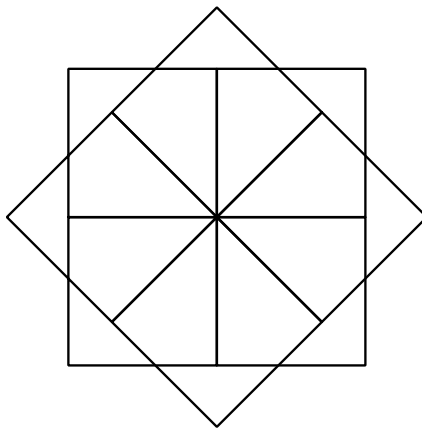
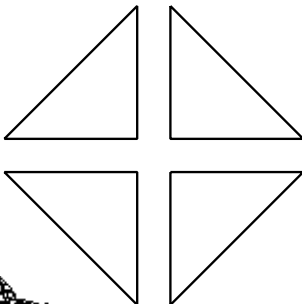
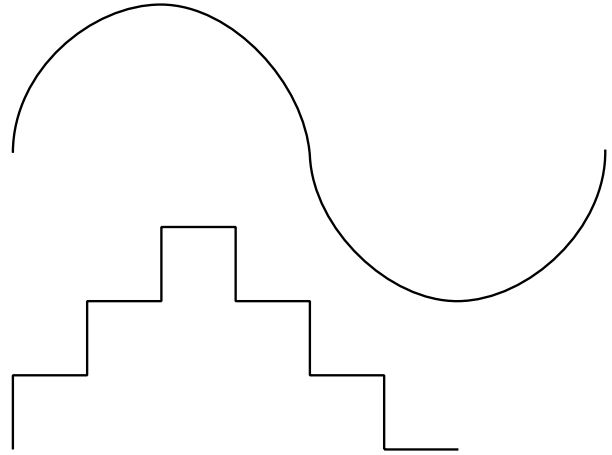
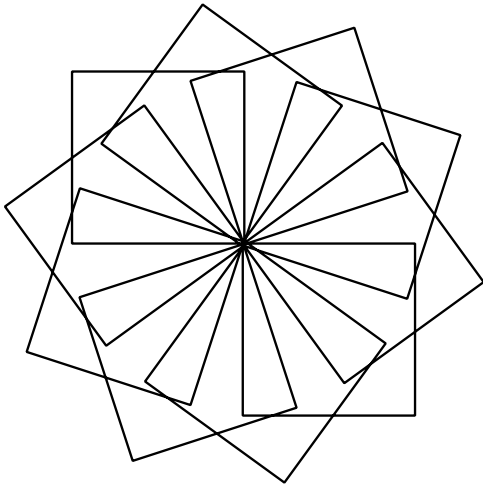
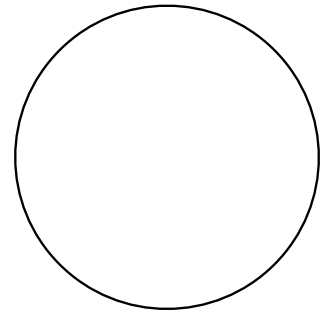
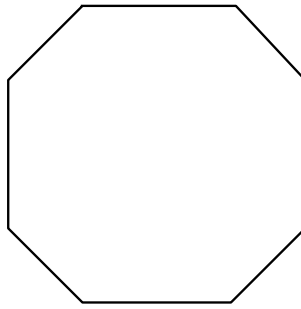
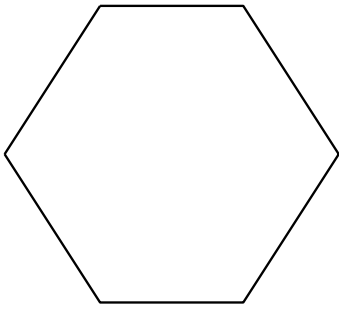
# TURTLE CHALLENGE I



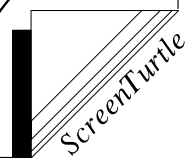
Supplied with Topologika's ScreenTurtle  
Can be used with all versions

ScreenTurtle

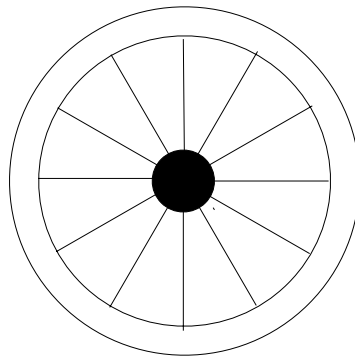
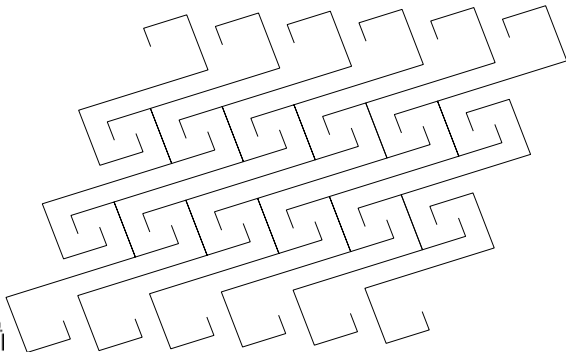
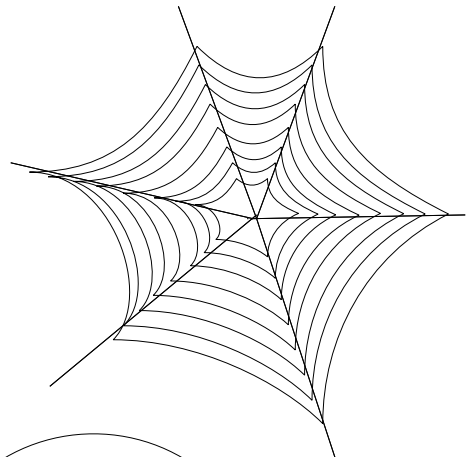
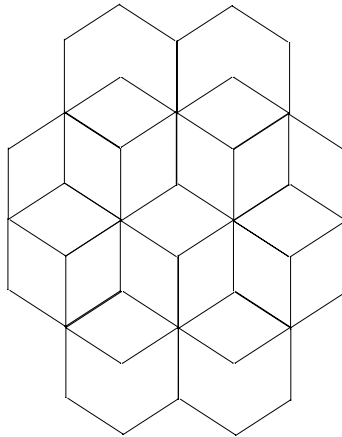
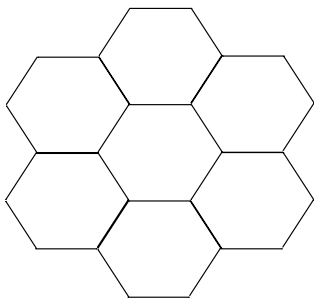
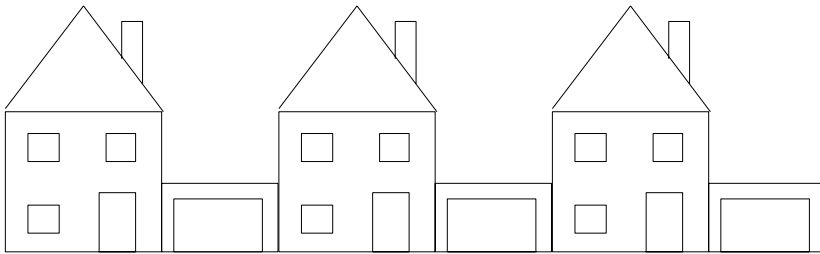
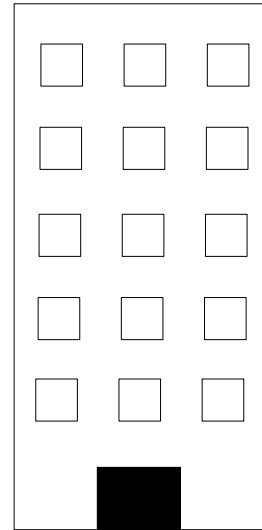
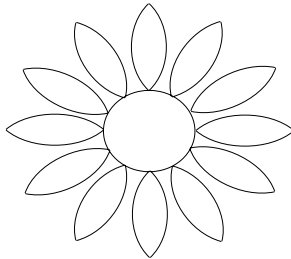
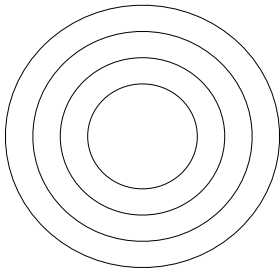
## TURTLE CHALLENGE 2



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# TURTLE CHALLENGE 3



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