



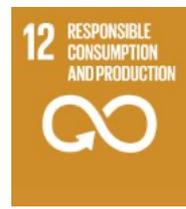
THE SYMBOLIC ELEMENT

Your group's symbolic element is **WOOD**, which represents **growth, vitality, and regeneration**. In the context of the **United Nations Sustainable Development Goals (UN SDGs)**, wood can symbolise innovations aimed at addressing sensible production and recycling.



This worksheet addresses the following UN SDGs within the Fashion industry:

- **Goals 3** Ensure healthy lives and promote well-being for all at all ages.
- **Goals 7** Ensure access to affordable, reliable, sustainable, and modern energy for all.
- **Goals 12** Ensure sustainable consumption and production patterns.
- **Goals 17** Revitalise global partnership for sustainable development.



THE FASHION INDUSTRY

In the fashion industry, technologies such as Artificial Intelligence (AI), Robotics, and Internet of Things (IoT) can be used to provide advancements, efficiency, and sustainability in the fashion sector.

AI	Robotics	Internet of Things

EXTENDED READING:

Artificial Intelligence (AI): AI predicts fashion trends by analysing social media and sales data. Example: Stitch Fix uses AI to personalise styling recommendations for customers.

Robotics: Robotics automates garment production, increasing efficiency. Example: Sewbot by SoftWear Automation assembles T-shirts autonomously, reducing production time and costs.

Internet of Things (IoT): IoT tracks inventory and reduces waste. Example: Zara uses RFID tags to manage stock levels and streamline supply chains.



THE ROBOTICS TECHNOLOGY

- Robotics technology can be used in sketching and sewing.
- Robotics technology can be used in automated cutting machines, often guided by computer-aided design patterns, can cut fabric with high precision, reducing waste and increasing efficiency.
- Robotic mannequins and interactive displays in stores can attract customers and provide dynamic marketing opportunities.
- Robots can manage inventory, sort products, and assist in order fulfilment efficiently.



THE MISSION: TO USE A ROBOT TO DRAW SIMPLE SKETCH

Question: What helps a drawing robot move?

Please write down your answer below:

Answer:

Question: How does a drawing robot turn left?

Please write down your answer below:

Answer:

Question: How does a drawing robot turn right?

Please write down your answer below:

Answer:

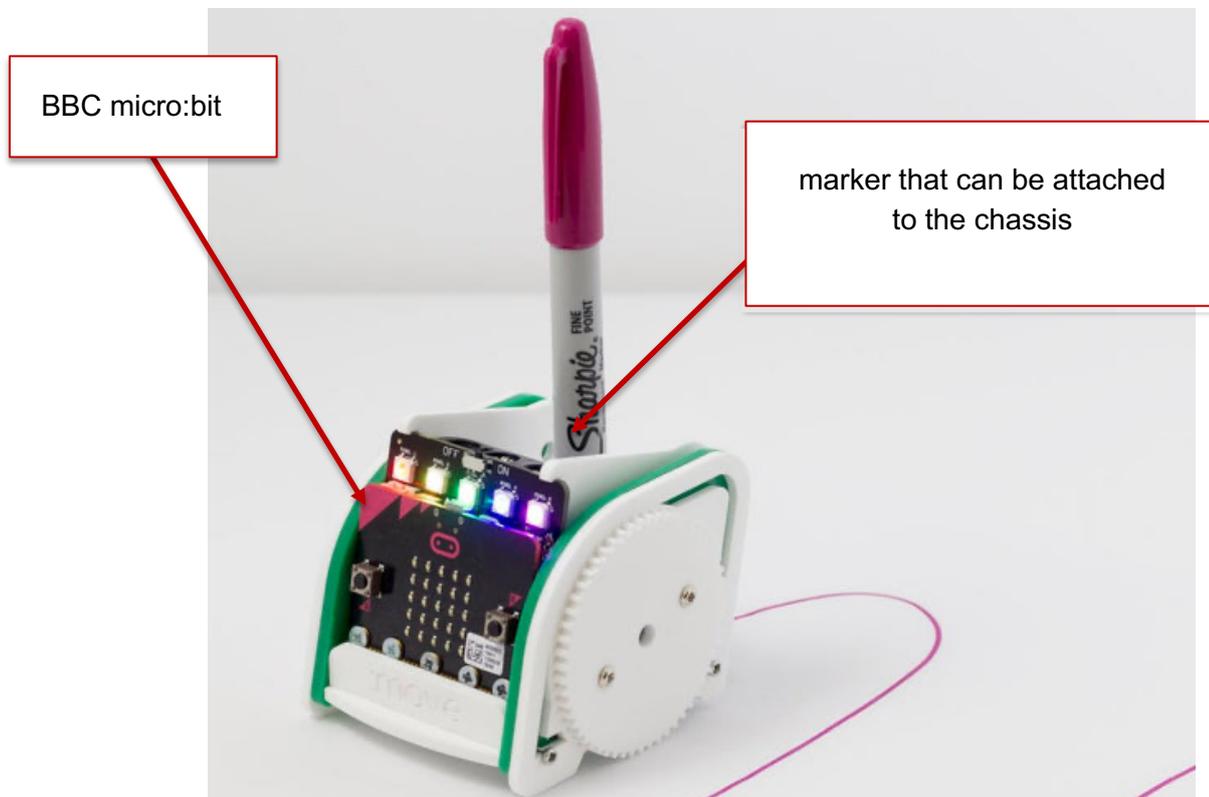


THE MISSION: CREATE A SIMPLE DRAWING USING A ROBOT

Drawing robots are machines that use a pen or other drawing instruments to create images based on digital designs or pre-programmed illustrations. These machines are a fascinating blend of technology and art, offering unique automated possibilities for drawing and creative expression.

STAGE ONE: USE ROBOTICS PROGRAMMING TO CREATE A SIMPLE DRAWING

1. The *MOVE mini Mk2 Buggy* is an educational robot kit designed for use with the *BBC micro:bit* board. The *MOVE mini* is capable of performing basic drawing tasks by attaching a pen or marker to the chassis. The *MOVE mini* has the following specifications:
 - Forward and Backward Movement: By controlling the rotation of the servo motors, the buggy can move forward and backward in straight lines.
 - Turning: The buggy can turn left or right by varying the speed and direction of the wheels, allowing it to create curves and angled lines.
 - Combined Movements: By combining straight movements and turns, the buggy can be programmed to draw various shapes and patterns.





- Below we have the coding building blocks that program the MOVE mini to draw certain shapes. The code uses **functions**, which are "self-contained" modules of code that accomplish a specific task. Read the code below and then answer the following questions.

```

on button A pressed
  call DrawShape1

on button B pressed
  call DrawShape2

function DrawShape1
  repeat 4 times
  do
    drive forwards 100 distance
    pause (ms) 500
    stop
    pause (ms) 500
    turn right 60 degrees
    pause (ms) 500
    stop
    pause (ms) 500

function DrawShape2
  servo write pin P1 to 0
  servo write pin P1 to 150
  
```

Question: What do the *drive forward 100 distance* and *turn right 60 degree* command mean in the code above?

Please write down your answer below:

Answer:

Question: What do the functions *DrawShape1* and *DrawShape2* in the code above do?

Please write down your answer below:

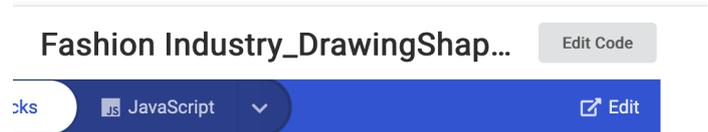
Answer:



2. Let's program the robot with the code above. To do that, please follow these five steps:

Step 1: Go to <https://makecode.microbit.org/S08670-26722-86670-48579>

Step 2: Click on the **Edit** button.



Step 3: Download your project and copy/install it into the BBC micro:bit attached to the MOVE mini.



Step 4: Now, place the MOVE mini robot on the big paper given to you, in the middle (see the screenshot below).





Step 5: Turn on the power button on the back of the top of the MOVE mini robot, and then press the **A button** on the BBC micro:bit board

Question: Can you draw what the MOVE mini robot has drawn? (*Caution: sometimes, hairs and dust get stuck in the MOVE mini robot wheels; please ask for the student ambassador's help if you notice the MOVE mini robot behaves strangely.*)

Please draw down your answer below:

Answer:

Step 6: Open a new fresh sheet of the big paper given to you, and then press the **B button** on the BBC micro:bit board.

Question: Can you draw what the MOVE mini robot has drawn this time? (*Caution: sometimes, hairs and dust get stuck in the MOVE mini robot wheels; please ask for the student ambassador's help if you notice the MOVE mini robot behaves strangely.*)

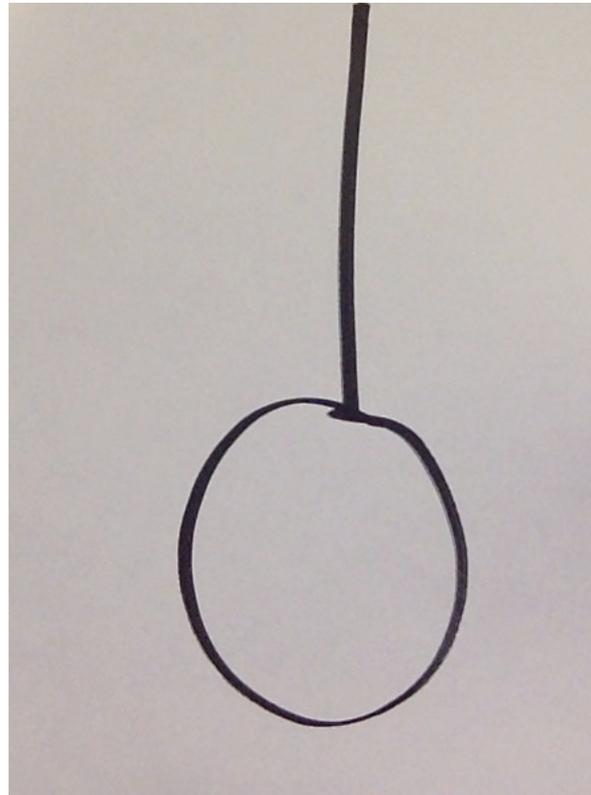
Please draw down your answer below:

Answer:



STAGE TWO: USING ROBOTICS PROGRAMMING TO DRAW CUSTOMISED SHAPES

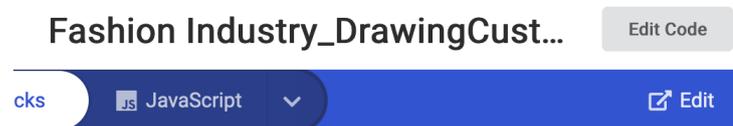
1. We will need to program the MOVE mini to draw the customised shape shown in the picture below. The shape consists of a straight line, and at the end of the straight line, there is a circle. You can use button A and button B to draw the shape



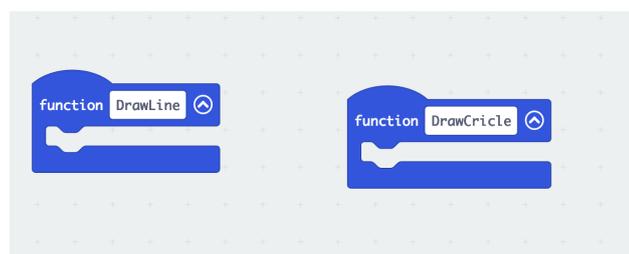
2. Let's program the micro:bit. To do that, please follow these steps:

Step 1: Go <https://makecode.microbit.org/S09749-28559-46489-22449>

Step 2: Click on the **Edit** button.



Step 3: Write code that draws a line for you inside the **DrawLine** function.





Step 4: Write code that draws a circle for you inside the **DrawCircle** function.



Step 5: Test your code on the big sheet of paper given to you.