# Lessons 15–17 – Bit:Bot Race Car Project Line Follower

|  |  |
| --- | --- |
| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * Getting Learners to think about algorithms in sections or modules that can be plugged together * Getting Learners to consider different ways to use sensors | * Apply what you have learnt to make the car complete one lap autonomously * Complete one safe lap as quickly as possible * Utilise sensors to automate the car and make the vehicle more ‘intelligent’ |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Learners enjoy watching their vehicle follow the instructions. * Get them to make small changes often so they can see the impact * Encourage the use of trial and error | **Expected Progress:**   * Learners use the line sensor on a test track   **Good Progress:**   * Learners use a line sensor to complete a lap of the racetrack   **Exceptional Progress:**   * Learners come up with idea and modifications to support multiple cars on the track at the same time |
| Key Concepts | Key Words |
| * Designing algorithms to solve problems * Breaking a problem down into easy to solve sections * Reading sensor data and making decisions using selection statements | * Autonomous * Algorithm * Decomposition * Line sensor |
| Differentiation | Resources |
| Some Learners will want to try and solve the lap in one go.  Encourage Learners to break it into sections and test each section one-by-one. | * Lesson 16-18 ppt * Lesson 16-18 Activity Sheet * Lesson 16 linefollower.hex * Racetrack Modules * Bit:Bot * PC * Access to <https://makecode.microbit.org> * Line follow tile templates * Paper planning |
| Lesson Flow | |
| * Share objectives and remind Learners of the project aim * Review Lesson 4 where we first looked at line sensors, review the code examples here * Look at the template that can be used to create a simple test track or get Learners to make their own * Talk through the code sample on Slide 5 – give Learners an opportunity to test this code and make any refinements * Get Learners thinking already about multiple cars and how to avoid having to have separate lines or lines that cross over * Support Learners in designing and making a test track using the template * Support Learners in making overlays for the racetrack and testing their code * Encourage Learners to attempt the Stretch Tasks | |
| Making | |
| * Test track * Overlays for race track | |