# Lesson 23 – Temperature Sensing

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| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * As the micro:bit operates it generates heat which increases the temperature of the board. * It has an inbuilt sensor which can be used to monitor the temperature of the micro:bit | * How the micro:bit can be used to take temperature readings * Create program that displays the temperature * How to adjust the accuracy of the reading * Program a real time temperature sensor |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Begin the lesson by asking Learners to guess the current temperature of the classroom * Once they have built the real time display they can test it by placing it outside or inside a fridge * Learners may be competitive to get the micro:bit down to a low temperature | **Expected Progress:**   * Learners will program a temperature display   **Good Progress:**   * Learners will adjust the reading to make it more accurate * Learners build a real time temperature display   **Exceptional Progress:**   * Learners customise the display with images and sound |
| Links to KS3 Programme of Study | |
| * understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems | |
| Key Concepts | Key Words |
| * Taking temperature readings * Storing the values * Adjusting the values * Using selection | * Temperature * Real time * Celsius |
| Differentiation | Resources |
| Learners can create the basic program and take a temperature reading. More able Learners may want to combine, sound / music / LEDs from the other lessons with their real time sensor. | * Lesson 23 ppt * Lesson 23 Activity Sheet * Sample Python code * 1 micro:bit per Learner * 1 battery pack for micro:bit * 1 USB cable to connect the micro:bit to a PC * Access to [micro:bit Python Editor (microbit.org)](https://python.microbit.org/v/3) * A thermometer |
| Lesson Flow | |
| * Introduce the concept of temperature – ask the Learners to guess the current temperature in the room as they enter * Discuss the use of the micro:bit as a temperature sensor * Tell Learners how to take a temperature reading * Display the code and ask Learners what they think it does * Learners copy program and try it on the micro:bit * Display the real room temperature and discuss why it may be different on the micro:bit * Leaners adjust the program code to reflect this * Learners to complete Activities and Stretch Task * Create a real time sensor * Learners may add sound, images, music into their project * Teacher to support as required. | |
| Making | |
| There are no making activities in this lesson. | |