

Lesson 1: Teacher Reference 1

micro:bit Activity Resources

Other unit-wide resources:

- [micro:bit & Makecode Debugging](#) provides micro:bit and MakeCode debugging guidance
- *Guidance: Saving Code* provides suggestions for helping students save and manage programs in Makecode
- In addition, the [8.1 Sensor and Coding Cards](#) may be used in the unit in one of several ways:
 1. A class deck that is introduced to students in pieces, as related code ideas are figured out. The lesson numbers in the Relevant Sensor & Coding Cards column are bolded to indicate which cards are newly relevant in that lesson.
 2. A class deck with cards selectively revealed to students in Lesson 15 to help them figure out how to carry out coding not explicitly developed in the unit.
 3. A class deck or individual decks (physical or digital) provided to students in Lesson 15 to support ideation and/or coding.

Lesson and Activity	Code Links	Student-Facing References	Teacher References	Setup and Code Explainer Videos	Relevant Sensor & Coding Cards (new cards bolded)
Lesson 7 Box Slide Investigation <i>Uses:</i> • micro:bits • Forward Education Cable Connectors • Forward Education Solar Sensors • Forward Education Breakout Boards	L7 Makecode for the light sensor in the Box-Slide Investigation	Activity • <i>Comparing Kinetic Energy</i> • Demonstration video of launching the cart with spring scale • 8.1 CS Lesson 7 Lab Procedure Flowcharts - Student Reference	Activity • <i>Investigation Sample Data</i> • 8.1 CS Lesson 7 Light Sensor Setup - Teacher Reference • Demonstration video showing how to build the cart launching stations.	micro:bit Basics • Pairing a micro:bit and downloading files • Ejecting a micro:bit (Chromebook) Code • Code explainer video for light sensor code	C, 13

Lesson 9 Five Sensors Lab Uses: • micro:bits • Forward Education CHARGE pack • Forward Education Breakout Board • Forward Education Cable Connectors (250 mm) • Forward Education Long Frame Building Blocks • Forward Education Small Frame Building Blocks • Forward Education Flex sensors • Forward Education Rotary Dial sensors • Forward Education Slider Component	• MakeCode Program: Accelerometer • MakeCode Program: Rotary Sensor • MakeCode Program: Flex Sensor • MakeCode Program: Slide Sensor • MakeCode Program: Tilt Sensor	Activity • <i>Investigate Five Sensors</i> • 8.1 Lesson 9 Five Sensors Lab Procedures - Student Reference S	Activity • 8.1 CS Lesson 9 Sensor or Station Setup - Teacher Reference	Activity <i>Accelerometer (internal) Sensor</i> • 8.1 CS Lesson 9 Accelerometer Sensor Station Setup <i>Tilt (internal) Sensor</i> • 8.1 CS Lesson 9 Tilt Sensor Station Setup <i>Rotary (external) Sensor</i> • 8.1 CS Lesson 9 Rotary Sensor Build & Station Setup <i>Flex (external) Sensor</i> • 8.1 CS Lesson 9 Flex Sensor Build & Station Setup <i>Slide (external) Sensor</i> • 8.1 CS Lesson 9 Slide Sensor Build & Station Setup Code • Accelerometer: Accelerometer Code Explainer • Tilt: Tilt Sensor Code Explainer • Rotary: 8.1 Lesson 9 Rotary Sensor Code Explainer • Flex: 8.1 Lesson 9 Flex Sensor Code Explainer • Slide: 8.1 Lesson 9 Slide Sensor Code Explainer	A, B, D, E, F
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Lesson 10 Digital Load Cell Demonstration <i>Uses:</i> • micro:bit • Forward Education Breakout Board • Forward Education Cable Connectors (250 mm) • Forward Education Digital Load Cell • Forward Education LCD Display	MakeCode Program: Digital Load Cell	Activity • <i>Digital Scale Dissections</i> • <i>Dissected Digital Scale</i> • <i>Metal Bar Comparison</i> • <i>Metal Bar Dissection</i> • 8.1 CS Lesson 10 Digital Scale Dissection	Activity 8.1 Lesson 10 Digital Load Cell Setup - Teacher Reference	Activity 8.1 CS Lesson 10 Digital Load Cell Build, Setup, and Debugging Code 8.1 CS Lesson 10 Digital Load Cell Code Explainer	G
Lesson 11 Flex Sensor Software Exploration Flex Sensor Hardware Exploration Code Modification and Testing <i>Uses:</i> • micro:bits • Forward Education Breakout Board • Forward Education Cable Connectors (250 mm) • Forward Education Long Frame Building Blocks • Forward Education Small Frame Building Blocks • Forward Education Flex sensors • Forward Education Rotary Dial sensors • Forward Education Slider Component	See Lessons 9-10	Activity • <i>Interpreting Blocks of Code</i> • Engineering Design Journal Code • <i>Flex Sensor Program</i> • <i>Load Cell Program</i> • <i>Other Sensors Exploration</i> • <i>Tilt Sensor Program (optional)</i>	See Lessons 9-10	See Lessons 9-10	1, 3, 4, 5, 8, 9, 10, A, D, E, F, G

Lesson 12 Force Sensor System Design Investigation <i>Uses</i> • micro:bits • Forward Education CHARGE pack • Forward Education Breakout Board • Forward Education Cable Connectors (250 mm) & Cable Extenders • Forward Education Base Plate • Forward Education Rotary Dial sensors • Forward Education Slider Component	• Sample Accelerometer Code • Sample Rotary Dial Sensor Code • Sample Slide Sensor Code	Activity • <i>Sensor System Investigation Setup and Testing</i> • <i>Station Data Collection</i> • 8.1 Lesson 12 Sensor System Cards • <i>Class copy of Force Sensor System Code Links</i>	Activity 8.1 Lesson 12 Sensor Station Setup		A, E, F, 3
Lesson 15 Final Project <i>Uses</i> • micro:bits • Forward Education Breakout Board • Forward Education Cable Connectors (250 mm) • Forward Education Long Frame Building Blocks • Forward Education Small Frame Building Blocks • Forward Education Flex sensors • Forward Education Rotary Dial sensors • Forward Education Slider Component	See prior lessons	Activity 8.1 CS Lesson 15 Pages for Engineering Design Journal	Activity • 8.1 Lesson 15 Project Setup - Teacher Reference • <i>Project Rubric</i>	See prior lessons	2, 6, 7, 10, 11, 12, 13, all others

Full sequence of Engineering Design Journal Additions

- [Engineering Design Journal](#) (Lesson 11)
- [8.1 CS Lesson 13 Pages for Engineering Design Journal](#) (Lesson 13)
- [8.1 CS Lesson 14 Pages for Engineering Design Journal](#) (Lesson 14)

- [8.1 CS Lesson 15 Pages for Engineering Design Journal](#) (Lesson 15)
- [8.1 CS Lesson 16 Pages for Engineering Design Journal](#) (Lesson 16)
- [8.1 CS Lesson 17 Pages for Engineering Design Journal](#) (Lesson 17)