ANSWER KEY

CODEBOT MISSION 9 LOG - Lesson 1

Pre-Mission Warm-Up

What are some sensors on CodeBot you know how to use?	Line sensors and proximity sensors
What other information from a CodeBot sensor would you like to have access to?	Answers will vary here, depending on their knowledge, curiosity and creativity. They may say something like its position or orientation. They may say something implausible, like visualizing its environment. Or they might have already previewed the lesson and say system information like battery power and temperature.

Mission 9 Lesson 1 – All Systems Go!

Mission 9 Introduction

What is the goal of this lesson?	Code a battery tester so you can tell how much fuel is left in your bot's tank.

Mission 9 Objective 1

What type of battery is needed to power the 'bot, and how many batteries are needed?	Four AA alkaline batteries
How much voltage do the batteries supply?	Fresh batteries supply 6.0 volts.

Fill out the table with your results from the console panel.

The three voltage readings will be similar, but don't have to be exactly like the ones in this table.

Students should see a slight decrease between the first voltage reading (no load) and the third reading (no load).

What is tested	Results
Switch in BATT position	0
Switch in USB position	1
Voltage (no load)	5.18581
Voltage (with load)	5.10148
Voltage (no load)	5.17945

Mission 9 Objective 2

After completing and running the code, fill out the table with your results.

The voltage readings will vary. Here is an example.

What is tested	Voltage	Capacity (percent)
Current load USB	5.13436	0.75
Current load (BATT)	6.06512	1.0

Mission 9 Objective 3

After completing and running the code, fill out the table with your results.

The voltage readings for current load will vary. Here is an example.

What is tested	Voltage	Capacity (percent)
Current load (USB)	5.13473	0.567367
Test load 3.9	3.9	0.0
Test load 4.2	4.2	0.0999994
Test load 4.8	4.8	0.4
Test load 5.2	5.2	0.599999
Test load 5.8	5.8	0.9
Test load 6.2	6.2	1.0
Current load (BATT)	6.0394	1.0

What do you notice about the capacity percent from Objective 2 compared to Objective 3?

Answers will vary. They should notice that there is more variety in the percentage with objective 3. They may notice it is more accurate, especially with the USB current voltage.

Mission 9 Objective 4

After completing and running the code, fill out the table with your results.

The user interface (UI) should be one blink, two blinks, or LED on.

The voltage readings for current load will vary. The last test case is the student's choice. Here is an example.

Test Case	Volts	Percent	UI
Current BATT	6.06119	1.0	One blink
Current USB	5.13726	0.56863	Two blinks
Test case	5.8	0.9	One blink
Test case	4.5	0.25	Two blinks
Test case	3.8	0.0	LED on
Test case	5.3	065	One blink

Post-Mission Reflection

How could you use the battery tester functions with other CodeBot programs?

Answers will vary. Students could say they would use it at the beginning of any program to check the health of the battery. They could also use it by calling it during a program and having the indicator light come on before the 'bot stops all together.