Mission 8 Assignment Log	Name:

Pre-Mission Preparation

You have been learning about finite-state machines and the different states a program can be in. This mission will prepare the spacecraft to land on Mars. What states do you think the landing will have?	Answers will vary

Mission 8 Checks

Objective #1
What are the three phases of this mission?

Phase	Details
init	Lander is about to enter Mars; yellow indicator lights and gear up
prepare	Craft detects ground; red lights and gear extended
landed	Shuttle touches down; green lights

Objective #2
What is needed to prepare the NeoPixel ring to use as an indicator to the crew?

Answers can vary. They can include:
The three loose wires to connect to the CodeX
Define constants for yellow, red and green
Define a constant that lights up all pixels.

Objective #3
List two facts about the object sensor

1. Emits IR light.
2. Detects reflected IR light with a phototransistor
3. Outputs True for detected and False for not detected
4. Can detect nearby objects
5. Can distinguish between black and white
6. Can count pulses as an object passes by

Objective #4
Describe the "pull" on an input pin:

The pull determines the default value of a pin when nothing is connected. Weak pull values can be overcome by applying an external high or low voltage.

Objective #5
What is a reason for using lander states in the program code?

You can avoid extra processor effort when a change is made to the code, or states are added.

Objective #6
What is needed to complete phase 2?

A microswitch to detect a landing.

Objective #7 What is the purpose of the 180 servo?	It is the right tool for moving the landing gear.
Why is it the better choice over the 360 servo?	It is the better choice because it goes to a position and holds it.

Post-Mission Reflection

Explain how the mission code is a finite-state machine:	Answers vary. They can include: The code uses three states: init, prepare and landed. The states determine what happens, such as which lights are used for indicating and where the landing gear is positioned.
What are some applications that might use an object sensor?	Answers will vary.