

<b>Mission 11 Assignment</b>	<b>Name:</b>
<b>Pre-Mission Preparation</b>	
This mission will use line sensors to stay on a line. What code for line sensors do you remember? (Review missions 7-9)	<p>Answers will vary. Answers could include:</p> <ul style="list-style-type: none"> <li>• <code>vals = ls.check(2000)</code></li> <li>• <code>val = ls.read(0)</code></li> <li>• <code>[ls.read(i) &gt; 2000 for i in range(5)]</code></li> <li>• Using vals to turn on line sensor leds</li> </ul>
<b>Mission 11 Checks</b> <b>Note:</b> <i>Instead of starting a new program and typing all the code for line sensing, you can use the program from Mission 9. Mission 11 will require a small change to Mission 9 and then many additions. If you use Mission 9, be sure to do a "save as" and give your new program a new filename.</i>	
Objective #1 What do you change in the code to detect a white line instead of a black line?	<code>vals = ls.check(2000, True)</code>
Objective #2 What variables are needed for counting the lines?	<code>was_line = False</code> (Boolean for state) <code>count = 0</code> (integer for counting dashes)
What is the augmented assignment for incrementing count?	<code>count += 1</code>
Objective #3 What is the condition for knowing when to stop the motors?	<code>if count == TOTAL_LINES:</code>
What is the code for stopping the motors?	<code>motors.enable(False)</code>
Objective #4 What does the math operator <code>//</code> do?	Integer division – It divides a number and then truncates the answer to just the integer part (no rounding).
What does the expression do: <code>progress = [True] * num_leds_on</code>	It creates a list by multiplying the Boolean value by an integer. If <code>num_leds_on</code> is 3, the result will be <code>[True, True, True]</code>
Objective #5 What does the math operator <code>%</code> do?	It is the modulo operator – It gives the integer remainder of a division problem (not the decimal part)
What is the branching statement for turning on or off the speaker?	<code>if remainder == 0:</code> <code>spkr.pitch(440)</code> <code>elif remainder == 3:</code> <code>spkr.off()</code>

<p>Objective #6 What does the math operator ** do?</p> <p>What single line of code turns on both proximity sensors?</p> <p>What single line of code turns off both proximity sensors?</p>	<p>The power or exponent operator – It uses the first number as the base and the second number as the exponent and does the math.</p> <p>leds.prox(3) –or– leds.prox(0b11)</p> <p>leds.prox(0) –or– leds.prox(0b00)</p>
<p><b>Post-Mission Reflection</b></p>	
<p>On a scale of 1 (not fun) to 5 (the best!), rank this mission. Explain why.</p>	<p>Answers will vary – hopefully very fun!</p>
<p>On a scale of 1 (too easy) to 5 (very hard), rank this mission. Explain why.</p>	<p>Answers will vary – hopefully not too hard or too easy</p>
<p>Describe an activity or application that could use integer division and modulo:</p>	<p>Answers will vary. Some possible answers are:</p> <ul style="list-style-type: none"> <li>● Use integer division and modulo to find the place values of a number</li> <li>● Use integer division and modulo to keep track of a player's turn and the total number of rounds played</li> <li>● Use integer division and modulo to know how many packages are filled with a given number of cookies, and how many are left over</li> </ul>