

Name \_\_\_\_\_

**CPADS Lab Activity 4****Possible instructions**

<b>pu()</b> :	Pen Up – does not draw while moving
<b>pd()</b> :	Pen Down – will draw when moving
<b>fd(x)</b> :	Forward – move forward <i>x</i> units ('-' moves backwards)
<b>rt(x)</b> :	Right turn – turn right <i>x</i> # of degrees (no movement)
<b>lt(x)</b> :	Left turn – turn left <i>x</i> # of degrees (no movement)
<b>repeat(x)</b> :	Repeat the indented instructions <i>x</i> # of times
<b>drawSquare(x)</b> :	Draws a square of size <i>x</i> about the cursor's current location. The function begins by putting the pen down and ends by picking the pen up such that the cursor returns to the original position and orientation.

**Examples:**

To move forward 1 unit:	<b>fd(1)</b>
To move backward 2 units:	<b>fd(-2)</b>
To turn right 60 degrees:	<b>rt(60)</b>
To repeat the indented instructions 3 times:	<b>repeat(3)</b>
To draw a square of size 2:	<b>square(2)</b>

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1. Write a function called **Row(*x*)** to construct a row of *x* boxes of size 1 using the **square(*x*)** and **repeat(*x*)** commands. You **MUST** return to the cursor to the original starting position once the boxes have been drawn. Note: The example below shows what the figure would look like for **Row(4)**.



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2. (Challenge) Use the **Row(x)** (from problem 2), and the **repeat(x)** commands to draw a pyramid with the base row having **n** boxes and each subsequent row having one fewer boxes until the top row only contains one box as shown in the figure below. The rows are all centered on each other. Figure out how to return the cursor back to its original position relative to the number of rows that were drawn.

*Hint:* Consider how the number of boxes in each row can be related to the value of the loop counter.

