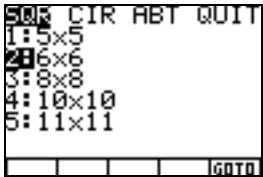
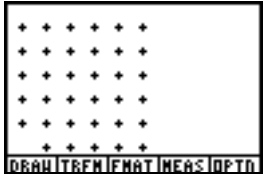


The van Hiele Levels Revisited

I. Investigation using a 6 x 6 square geoboard:

A. van Hiele Level 0 (Visualization—It LOOKS like one to me!)

<ol style="list-style-type: none"> 1. Choose the Geoboard APP on a TI-73 calculator. 2. Choose a 6 x 6 board. 3. Draw what looks like an equilateral triangle on the geoboard. To do this, choose DRAW using the Y= button. Using the red arrow keys, move the cursor to a desired point. Then click on ADD, also using the Y= button, to start drawing your triangle. Draw the sides of the triangle by using the arrow keys to move to the second vertex. Press ADD again to set the second vertex. Now move to the third vertex and press ADD. Press DONE and QUIT, using the corresponding "soft keys" on the top row of red buttons. 	 
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B. van Hiele Level 1 (Analysis—What do I know about the triangle's parts?)

1. Now determine if you have drawn an equilateral triangle by pressing MEAS on the geoboard window, then choosing LENGTH (highlight it and press ENTER). The cursor will be blinking on one of the vertices. Press ENTER to choose the first vertex, then use the arrow keys to get to the second vertex, then press ENTER again. You should see the length of the first side. Record the length in the table below. In

a similar fashion, find the lengths of the other two sides and record them in the table below. If you did not get an equilateral triangle, try drawing a second triangle and measuring its sides.

	Length of 1 st side	Length of 2 nd side	Length of 3 rd side
First triangle			
Second triangle			

C. van Hiele Level 2 (Informal Deduction—Can I use a logical informal argument to explain my thinking?)

1. Were you able to draw an equilateral triangle the second time?
 _____ Do you think it would ever be possible on a 6 x 6 geoboard?
 Why or why not? Explain your reasoning.

Would you be able to make an equilateral triangle on a 5 x 5 or 8 x 8 geoboard? Why or why not? If you are not sure, use the Geoboard APP to investigate.

D. van Hiele Level 3 (Formal Deduction—Can you prove your conjecture using postulates, theorems, and/or definitions?)

1. Determine a way to prove your conjecture about your triangle using postulates, theorems, and/or definitions. You may use a diagram to help prove your conjecture.

II. Investigation using a circular geoboard:

A. van Hiele Level 0 (Visualization—It LOOKS like one to me!)

1. Choose the Geoboard APP on a TI-73 calculator.
2. Arrow to the right to CIR to get a circular geoboard.
3. Choose a radius of 4 by arrowing down to the second row and choosing 4, then pressing ENTER.
4. Choose 12 pegs.
5. Press GOTO using the GRAPH key. You should see your circular geoboard on the screen.
6. Try creating an equilateral triangle on this geoboard. Press DRAW, then ADD, to choose the first vertex of your triangle. Use the arrow keys to get to the second vertex, then press ADD to set that vertex. Repeat the process to get to the third vertex. Finally, press DONE and QUIT using the soft keys.

B. van Hiele Level 1 (Analysis—What do I know about the triangle's parts?)

1. Choose MEAS, then choose LENGTH (by highlighting it and pressing ENTER) to measure the sides of your triangle.
2. The cursor will be blinking on one of your vertices. Press ENTER to set the vertex. Use the arrow keys to get to the second vertex, then press ENTER again. The length of this side of the triangle should show up on the screen. Repeat the process for the other two sides of the triangle, and enter the lengths in the table below.

	Length of 1 st side	Length of 2 nd side	Length of 3 rd side
First triangle			
Second triangle			

C. van Hiele Level 2 (Informal Deduction—Can I use a logical informal argument to explain my thinking?)

1. Were you able to draw an equilateral triangle using the circular geoboard? _____
2. If not, try again and record the lengths of the sides of the triangle in the table above. Is it possible to draw an equilateral triangle on a circular geoboard? Why or why not? Explain your reasoning. You may be able to use some of the other MEAS choices to explain your reasoning.

D. van Hiele Level 3 (Formal Deduction—Can you prove your conjecture using postulates, theorems, and/or definitions?)

1. Optional: Prove that your triangles are or are not equilateral using theorems related to circles, chords of circles, and/or arcs of circles or any other theorems that would be useful for proving your conjecture.