I definitely see the connection between the stages and findings of Van Hiele and the work we did in activity 3.3 with Geometer Sketchpad. I didn't understand the concept when I read it but as I worked through the exercise, I could begin to understand what he was talking about. A first view of each object gave descriptions of current physical characteristics. Then when I had to start to identify what characteristics stayed the same and which ones changed, it "clicked" that some of the shape characteristics were similar, so it made the step of identifying similarities much easier. The instructions provided for this exercise were important - if just asked to describe a set of figures, students wouldn't necessarily look for similarities and differences. Sketchpad can help students move beyond stage one to see these similarities between objects. It can also act as a tool for students to collaborate, work in groups and learn from discussion.

Evaluation of Sketchpad to process standard questions:

1. Problem Solving

   The activity provide opportunities to solve problems using a variety of strategies - we used it for a variety of simple problems. I still haven't figured out equilateral triangles yet but would like to know more.

   The activity teaches the student new concepts as the student engages in solving problems - the shape similarity exercise showed how students could gain an awareness of shapes. The program provides mathematical terminology such as perimeter and area as it applies concepts.

   Sketchpad didn't provide ways that students can reflect on their process - Not that we saw - we had to use outside tools for discussion.

2. Reasoning & Proof

   The activity has students try a variety of mathematical reasonings, depending on the activity. From the website you can see this program can get pretty sophisticated (I'm glad we kept it simple!) but there seems to be a wealth of information out there on how to utilize the program to teach mathematical concepts.

   Does the activity have the student develop arguments substantiating their thinking? I didn't see evidence of this in Sketchpad.

   Does the activity have students select and try a variety of reasonings and proofs? Depending on the activity it does.

3. Communication

   Sketchpad promotes the use of mathematical language - the program uses terminology as it applies concepts.

   The program does not appear to contain a tool that students use to communicate their ideas to others.

   Does the activity promote working in pairs or groups? It could be used individually or in pairs or groups. I think students would benefit from working together at this program.

4. Connections

   Does the activity demonstrate how mathematical ideas interconnect and build on one another? Yes and it seems to have much higher capabilities that what we saw.

   Does the activity make a real world connection with another subject area or real events? Not by itself. An activity could be developed to be related to other subjects or activity.

   Does the activity promote solving problems that students may use in real life? Depending on the activity, it definitely could.

5. Representation

   Does the activity involve organizing, recording and communicating mathematical ideas? Yes,

depending on the activity. The shape similarity exercise we did was one that involved a lot of data comparisons.

Does the activity have the student create a representation as part of the activity? Yes, this is a strength of Sketchpad - visually working with shape representations.

Does the activity use representations to model and explain mathematical concepts? Not that we saw.

Overall, I think that Sketchpad met many of my process standard goals. I found it a very interesting program to work with and think that students would benefit tremendously from working with it. I found it very easy to work with - much easier and faster and more beneficial than paper, compass, protractor.