# Geometry Exercises

Do you think a student who is at van Hiele Level 2 is capable of doing a problem more than one way as was discussed in problem solving? Explain your position.

Do you see a need for concern that students entering a high school geometry course that appears to be van Hiele Level 3 are only at van Hiele Level 2? Why or why not?

Compare and contrast the basic tenets of Piaget and the van Hieles. Conclude with a position statement dealing with which seems most logical to you, and support it with some explanation of how you arrived at your conclusion.

Describe the sequence of steps necessary to bisect an angle by folding it with paper. You should do this before you describe it. Give your instructions to a novice to determine if they are clear enough to produce the desired results.

Is there a need for an informal geometry course in the curriculum that precedes the typical high school geometry course? Why or why not?

Eratosthenes measured the earth's circumference to within 1% of what we now have it to be. He did it in the late part of the third century B.C. Eratosthenes knew that at summer solstice (about June 21) the sun would be directly over the city of Syene in Egypt. He could tell this because the sun's rays were reflected from the water in a deep well with no well wall shadows. He put a vertical rod in the ground at Syene and also at Alexandria. The Syene stick cast no shadow at noon and the Alexandrea one did. From that, Eratosthenes calculated the angle of elevation of the sun to be 82.6°. He knew the distance between the two sticks was about 500 miles. He used the alternate interior angle theorem to conclude that the central angle between the two sticks was 7.2°. But, because 7.2° is $\frac{1}{50}$ of the circumference of a circle, he deduced that the circumference was about 25,000 miles. Find an another example of measurement in the history of mathematics. Describe how the measurements were done and create a sketch using dynamic software that will show what was done.