Two groups of students measured the length of a strip of magnesium ribbon with different rulers. Here are their measurements:

Group A: 10.0 cm, 9.9 cm, 10.1 cm, 10.0 cm
Group B: 10.01 cm, 10.00 cm, 10.02 cm, 10.01 cm

(a) What are the differences among the measurements within each group? Why?

(b) What are the differences of the measurements between the groups? Why? Sketch the ruler used for the measurements by each group.

(c) Report the results for each group with the average length and average deviation of the data.
(d) If the strip of magnesium was more precisely determined to be 10.082 cm, find the percent error of the average length for each group.

(e) Which group is more accurate? How do you know? What contributes to the greater accuracy?

(f) Which group is more precise? How do you know? What contributes to the greater precision?

(g) Suppose the width of the ribbon is 0.47 cm. Calculate the area of the ribbon using the average length from each group.