Consider the problem of computing the volume of a cube from measuring the length of a side.

1. Assume that we measure the side to be 5 cm, and have an error of ± 1 cm. What is the propagated error in the volume of the cube?

2. What percentage error does the error in part (a) correspond to?

3. Now, let's consider the reverse problem. If I want to be within 5 cm^3 when I compute the volume of the cube, what do I need my error in measurement to be less than?

4. If I want to have a 5% error in my computation of the volume, what percentage error am I allowed to have in my measurement of the side length?