A four sided pyramid (upside down) is shown at right. The pyramid is 10 cm tall. Cross-sections are squares. The top end is 5 cm on a side.

1. Use the $y$-axis for the axis of integration.

2. Find the volume of a typical slice.
   
   (a) Draw a typical slice and label its dimensions with appropriate arrows as shown.

   Write the volume in terms of the dimensions used

   $\frac{1}{3} \cdot \frac{w}{2} \cdot \frac{10}{2} \cdot h^2 = \text{______________}
(b) Put a coordinate system on this problem. There are two main choices, put the origin at the tip or put the origin at the base of the pyramid.

For your choice of coordinate system, locate and label the dimensions of the typical slice using appropriate arrows as shown.

(c) Find the volume of the typical slice in terms of the variable of integration.

\[ \text{Volume} = \] 

3. Find the bounds of integration and write an integral for the total volume of this pyramid.