We want to relate the small length, area, or volume element to \( \Delta m \), the amount of mass contained within.

In one dimension, this relation is called the linear density, \( \lambda \), which is \( \Delta m / \Delta l \).

For a uniform rod of length \( L \) and total mass \( M \), \( \lambda \) is equal to \( M / L \). In two dimensions, the area element contains an amount of mass \( \sigma \times \Delta A \), where \( \sigma \) has units of mass over area.

Finally, in three dimensions, the volume density \( \rho \) connects the small mass, \( \Delta m \), to the volume, \( \Delta V \).