Divergence theorem:

$$\iint_{\partial R} \vec{F} \cdot \hat{n} dS = \iiint_R \vec{\nabla} \cdot \vec{F} dV$$

Integral form of Gauss' Law:

$$\iint_S \vec{D} \cdot d\vec{S} = Q_{enc}$$

Differential form of Gauss' Law (1st Maxwell's equation)

$$\vec{\nabla} \cdot \vec{D} = \rho_V$$

$$\iiint_V \vec{\nabla} \cdot \vec{D} dV = \iiint_V \rho_V dV$$

Apply divergence theorem to get back to the integral form.

A gaussian surface is a closed hypothetical surface to chosen to enclose a volume for the purpose of measuring flux. Choose to be symmetric to the $\vec{E}$ field such that the $\vec{E}$ field is always perpendicular (or parallel) to the surface.
For example, for a sheet charge, a cylinder is a perfect Gaussian surface such that the top and bottom faces of the cylinder are perpendicular to the $\vec{E}$ from the sheet charge. For a spherical charge, a sphere is good.