\[ \frac{dF}{dA} \text{ in pressure } \int \text{ (for simplicity because we can see direction)} \]

- Mass
- Momentum
- Work
- Energy
- Entropy

\[ \frac{dM}{dt} \bigg|_{\text{sys}} = 0 \]

\[ \text{ext vs. int } \Rightarrow \text{ Qs from intuition, what is it for mass} \]

\[ \text{in} + \text{prod} = \text{out} + \text{accum} \]

\[ \text{min} = \text{max} + \frac{dM}{dt} \]

Look at Fig. p 102 get

\[ \frac{dM}{dt} \bigg|_{\text{sys}} = 0 = \frac{\partial}{\partial t} \int_{\text{env}} p \, dV + \int_{\text{sys}} p \, \vec{V} \cdot dA \]

Use to solve filling square cuvette with square tubing delivering fluid from side.