

---

D R E X E L U N I V E R S I T Y  
Department of Chemical and Biological Engineering  
CHE 230 – Chemical Engineering Thermodynamics I  
Winter 2024-2025 (202425)  
Prof. Abrams – cfa22@drexel.edu  
Midterm Exam – February 11, 2025

This is an example header named [example\\_head-22758484.tex](#).

1. (15 pts)

This is an example problem named [example\\_problem\\_template-22758484.tex](#).

Determine the product of 5 and 8.

2. (16 pts)

This is an example problem named [example\\_problem2\\_template-22758484.tex](#).

Determine the quotient of 3.8 and 352.0.

3. (17 pts)

Superheated steam at 4 MPa and 352.0°C is to be converted to saturated steam at 3 MPa in a desuperheater. This desuperheater is supplied with inlet liquid water at 54.0°C. The unit should produce saturated steam at a rate of 46.0 kg s<sup>-1</sup>. Assuming adiabatic operation, and assuming the liquid inlet is saturated, what is the mass flowrate of the inlet water?

The following enthalpies will be useful:

Superheated steam at 352.0°C and 4 MPa:  $\hat{H} = 3,101.90 \text{ kJ/kg}$ ;

Saturated liquid water at 54.0°C:  $\hat{H}^L = 226.05 \text{ kJ/kg}$ ; and

Saturated water vapor at 3 MPa:  $\hat{H}^V = 2,803.61 \text{ kJ/kg}$ .

This is an example tail named [example\\_tail.tex](#).