

Name: _____

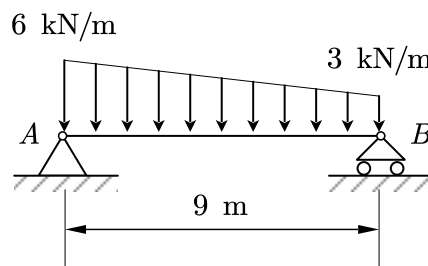
In-Class Problems #1

1. What does it mean for a structure to be considered *statically determinate* / *indeterminate*?

Statically determinate: All reactions and internal forces in the structure can be determined from equilibrium equations.

Statically indeterminate: More known reactions and internal forces than equilibrium.

2. Calculate the reactions for the following structures

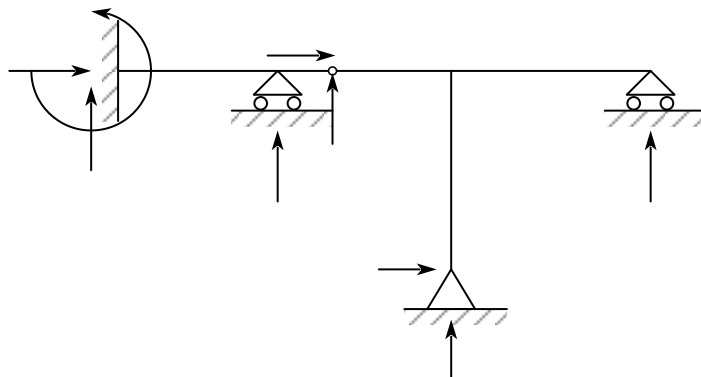


$$\sum F_x = 0, H_A = 0$$

$$\sum M_A = 0, V_B \cdot 9 = 3 \times 9 \times \frac{9}{2} + 3 \times 9 \times \frac{1}{2} \times \frac{1}{3} \times 9, V_B = 18 \text{ kN}$$

$$\sum F_y = 0, V_A = 3 \times 9 + 3 \times 9 \times \frac{1}{2} - 18 = 22.50 \text{ kN}$$

3. Classify the structure as statically determinate, statically indeterminate, or unstable



$$\text{Reactions (r)} = 3 + 1 + 2 + 2 + 1 = 9$$

$$\text{Members (n)} = 2$$

$$r = 9 > 3n = 6 \implies \text{statically indeterminate}$$