

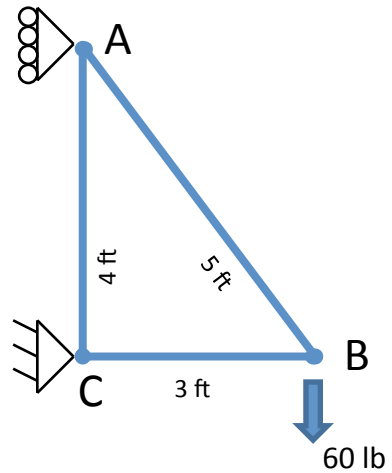
Assignment 2.2i: Truss Calculations Worksheet

Name
Period

Date:

Problem 1:

1. Identify Reaction Forces at mounts (fixed get 2, rolling get 1)
2. Draw a free body diagram of node with fewest unknowns
3. Draw and label unknown forces
4. Sum forces in X and Y
5. Use similar triangles to calculate x from y or y from x
6. Draw newly found forces on truss diagram
7. Reflect truss forces to opposite ends
8. Repeat with remaining nodes



Problem 1: Solution

1. Identify Reaction Forces at mounts (fixed get 2, rolling get 1)
2. Draw a free body diagram of node with fewest unknowns
3. Draw and label unknown forces
4. Sum forces in X and Y
5. Use similar triangles to calculate x from y or y from x
6. Draw newly found forces on truss diagram
7. Reflect truss forces to opposite ends
8. Repeat with remaining nodes

Node B

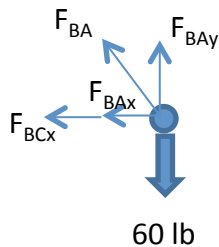
$$F_{BAy} - 60lb = 0$$

$$F_{BAy} = 60lb$$

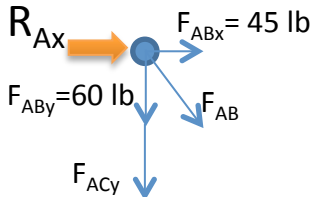
$$\frac{F_{BAx}}{3} = \frac{F_{BAy}}{4} \rightarrow F_{BAx} = 3 \frac{F_{BAy}}{4} \rightarrow F_{BAx} = 45lb$$

$$F_{BCx} + F_{BAx} = 0$$

$$F_{BCx} + 45lb = 0 \rightarrow F_{BCx} = -45lb$$



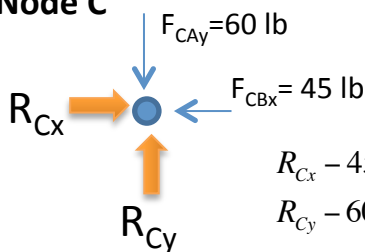
Node A



$$R_{Ax} + 45lb = 0 \rightarrow R_{Ax} = -45lb$$

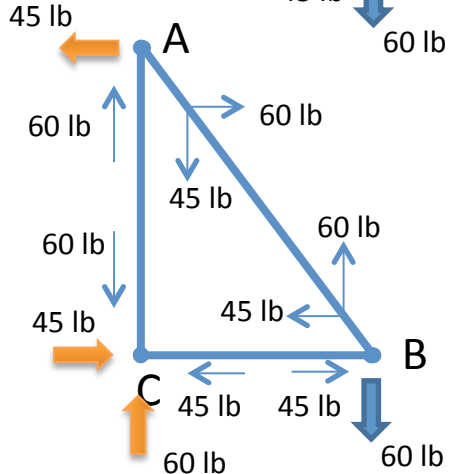
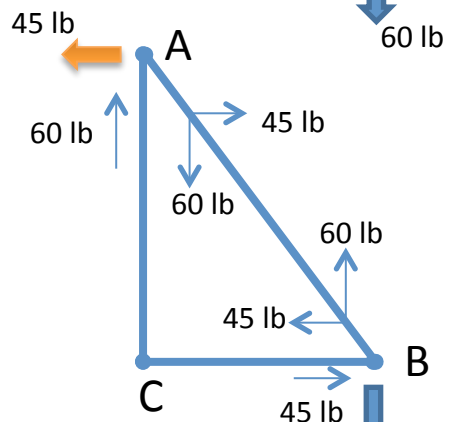
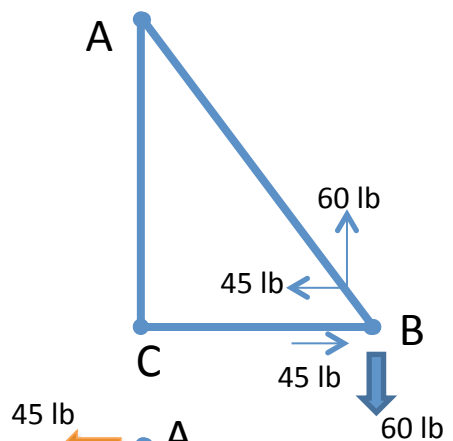
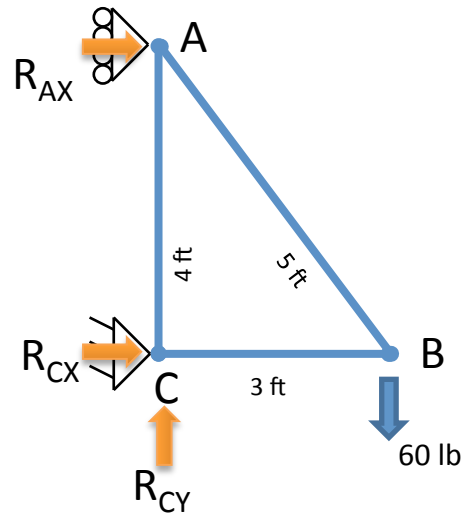
$$F_{ACy} + 60lb = 0 \rightarrow F_{ACy} = -60lb$$

Node C



$$R_{Cx} - 45lb = 0 \rightarrow R_{Cx} = 45lb$$

$$R_{Cy} - 60lb = 0 \rightarrow R_{Cy} = 60lb$$



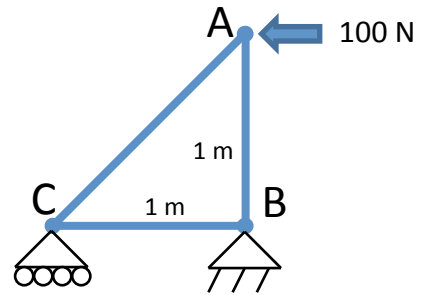
Problem 2:

Name

Period

Date:

1. Identify Reaction Forces at mounts (fixed get 2, rolling get 1)
2. Draw a free body diagram of node with fewest unknowns
3. Draw and label unknown forces
4. Sum forces in X and Y
5. Use similar triangles to calculate x from y or y from x
6. Draw newly found forces on truss diagram
7. Reflect truss forces to opposite ends
8. Repeat with remaining nodes



Problem 3:

1. Identify Reaction Forces at mounts . (Since the truss and loading is symmetric the reaction forces at B and D should be the same.)
2. Identify all forces on node C

