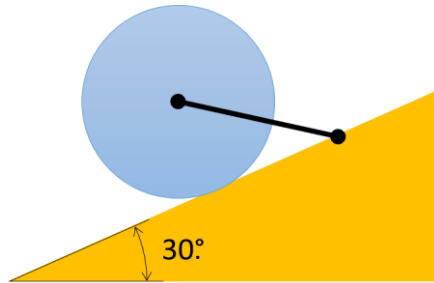


ENGR/PHYS 216 – Spring 2023
HW Assignment 7: Particle Statics

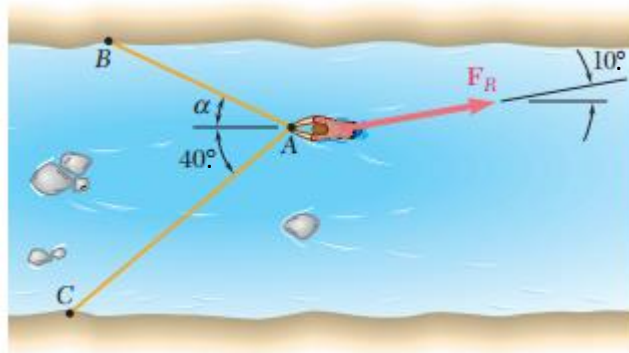
Note: Remember to draw a free body diagram! Your FBDs will be graded for correctness.

1. A large ball rests on an inclined surface as shown below. Draw a proper free body diagram for the ball of weight W . If the cable suddenly snaps, what will be the ball's velocity after it has rolled a distance of 3.5 m? You may assume that the ball rolls smoothly on the surface (no friction).

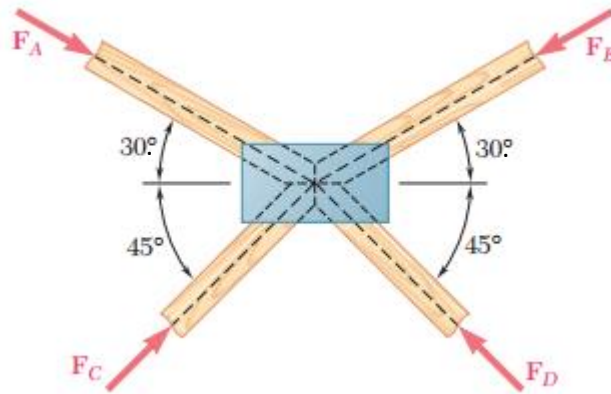


The angle shown in the figure is 30. degrees.

2. Ropes AB and AC are thrown to a boater whose canoe has capsized. If $\alpha = 25^\circ$ and the magnitude of the force F_R exerted by the flowing water on the boater is 85 lb, determine
- the tension in rope AB
 - the tension in rope AC



3. Four wooden members are joined with metal plate connectors and are in static equilibrium (not moving) under the action of the four forces shown. If $F_A = 3.1 \text{ kN}$ and $F_B = 2.6 \text{ kN}$, determine the magnitudes of F_C and F_D .



4. Two cables are tied together at C and are loaded as shown.
 Part 1. If $W = 195 \text{ lb}$, determine the tension (a) in cable AC and (b) in cable BC.
 Part 2. Determine the maximum value for W such that the tension will not exceed 216 lb in either cable.

