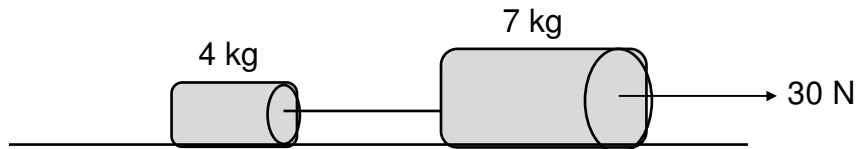


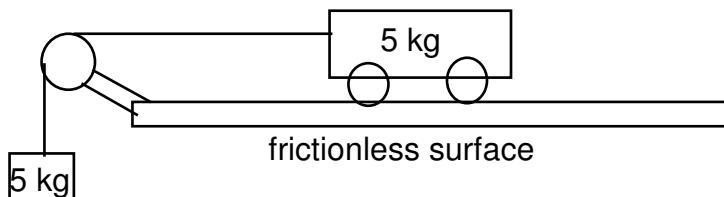
# DYNAMICS

## SYSTEMS WORKSHEET

- Two barrels of masses 4 kg and 7 kg are pulled across the frictionless surface of a frozen pond by an ice fisherman. If he exerts a force of 30 N on the first barrel, as shown in the figure below, determine the acceleration of the system and the tension (Pre-AP and DI) in the cord connecting the barrels.



- Determine the acceleration of the system in the figure below and the tension (Pre-AP and DI) in the cord between the carts..



- Repeat the above problem with a hanging mass of 10 kg. The mass in the cart remains the same. What is the acceleration of the system and the tension (Pre-AP and DI) in the cord.
- A 1.00-kg mass and a 4.00-kg mass are attached to a lightweight cord that passes over a frictionless pulley. Find the acceleration of the masses and the tension (Pre-AP and DI) in the cord.
- Repeat the above problem is the masses have changed to 3 kg and 7 kg.

### ANSWERS TO THE ODD-NUMBERED PROBLEMS:

- $2.727 \text{ m/s}^2$ , 10.9 N
- $4.9 \text{ m/s}^2$  to the left, 24.5 N
- $6.533 \text{ m/s}^2$  to the left, 32.67 N
- $5.88 \text{ m/s}^2$ , 15.68 N
- $3.92 \text{ m/s}^2$ , 41.16 N