

## Translational Equilibrium

Determine whether a given object is in translational equilibrium.

1. A very heavy box of books with mass of 24.0 kg is pushed on a leveled surface to the right with a force of 50.0 N. The box is also pulled with force of 80.0 N [R]. The force of friction is 6.5 N.

∴ The object is \_\_\_\_\_ and it will  
\_\_\_\_\_ to \_\_\_\_\_.

2. A 0.5-kg bucket filled with 8.0 L of water is pulled by two separate ropes. One rope pulls with force of 130.0 N right at an angle of  $30^\circ$  above horizontal, while the other rope pulls with force of 94.7 N left  $38^\circ$  above horizontal.

$\therefore$  The object is \_\_\_\_\_ and it will  
\_\_\_\_\_ to \_\_\_\_\_.

3. A 10.802-kg object is being pulled by three ropes. One rope pulls with 84.0 N right  $20^\circ$  above the horizontal, the other rope pulls with 120 N left  $40^\circ$  above the horizontal and the third rope pulls only 13 N right.

$\therefore$  The object is \_\_\_\_\_ and it will  
\_\_\_\_\_ to \_\_\_\_\_.

List contact forces you know:

List field forces you know:

How do contact forces differ from field forces and how are they similar?

Differences:

Similarities:

Give three examples that demonstrate that friction is useful.