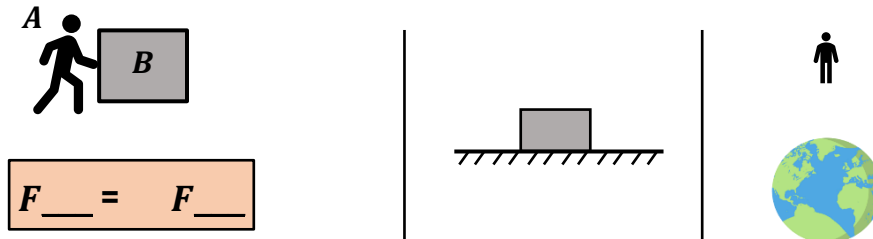


CONCEPT: NEWTON'S THIRD LAW

- Remember: Newton's 1st Law: Law of **Inertia**, Newton's 2nd Law: $\Sigma F = ma$
- Newton's 3rd Law: Law of** _____
 - Every action (force) results in a _____ of (1) equal _____ but (2) opposite _____.
 - All forces exist in Action-Reaction force pairs, which (3) always act on _____ objects.



EXAMPLE: You (80 kg) stand on a frozen lake with a 40kg ice block. You push the ice block with a force of 20N. Assuming no friction, **(a)** what is the force the block exerts on you? **(b)** What is the block's acceleration? **(c)** What is your acceleration?

FORCES WITH MULTIPLE OBJECTS

For each object:

- 1) Draw FBD: W, F_A, T, N, f
- 2) Write $\Sigma F = ma$
- 3) Solve

- Remember from $\Sigma F = ma$: Sum of all Forces [**ON** | **BY**] **A** = mass OF **A** $\times$ acceleration OF **A**
- Action-Reaction _____ mean 2 objects have the same acceleration! Acceleration is inversely proportional to mass.

PROBLEM: Which of the options is NOT an action-reaction pair in the following situation? A book slides across the floor, slowing down due to friction.

- A) Friction on the **book** from the **floor** & friction on the **floor** from the **book**
- B) Weight of the **book** from the **Earth** & gravitational force on the **Earth** from the **book**
- C) Weight of the **book** & normal force on the **book**
- D) Normal force on the **book** from the **floor** & normal force on the **floor** from the **book**