$\xrightarrow{+}$ $\xrightarrow{}$ $=$ $\underrightarrow{\text{motion}}$

$\xrightarrow{+} \xleftarrow{} = $ no motion
balanced

$\xrightarrow{+} \xleftarrow{} = \xleftarrow{\text{motion}}$

Types of Forces

- Tension Force = **Pulling** force

- Friction Force = force **opposing** motion (opposite way object is moving)

- Weight = the force of **gravity** acting on an object/person

- Normal = force **opposite** the weight

Drawing Force Diagrams

- Joe is trying to move a box of weight equipment 20m across the gym floor. The weight of the box is 45N. Joe pulls with a force of 50N. The friction force between the box and floor is 15N. **What is the net force on the box?**

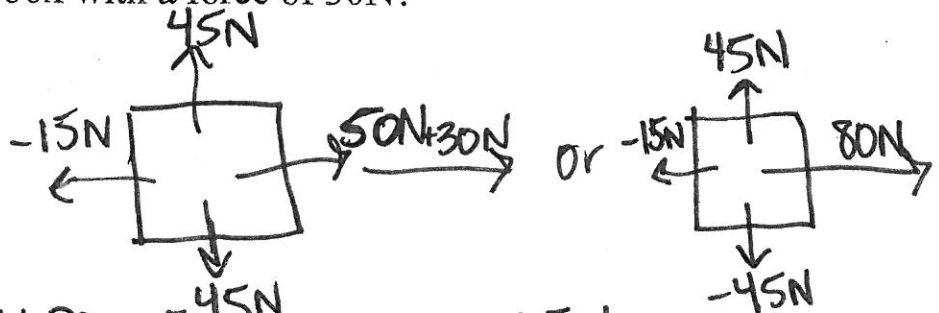**Force to right and up(+)**
Force to left and down(−)

45N (normal)
(friction)
−15N ← [box] → 50N (tension)
−45N (weight)
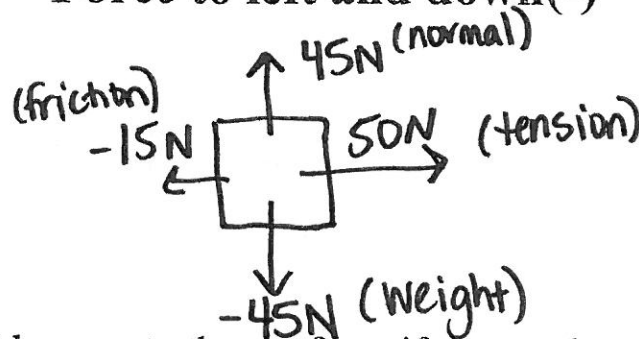
F_{net} = add all forces
= 45N + 50N + −45N −15N
= 35N

- What would happen to the net force if a second student helped Joe and pulled the box with a force of 30N?

Joe is still pulling.

45N
−15N ← [box] → 50N+30N
−45N

or

45N
−15N ← [box] → 80N
−45N

F_{net} = 45N + 80N + −45N + −15N = 65N