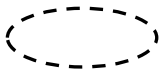

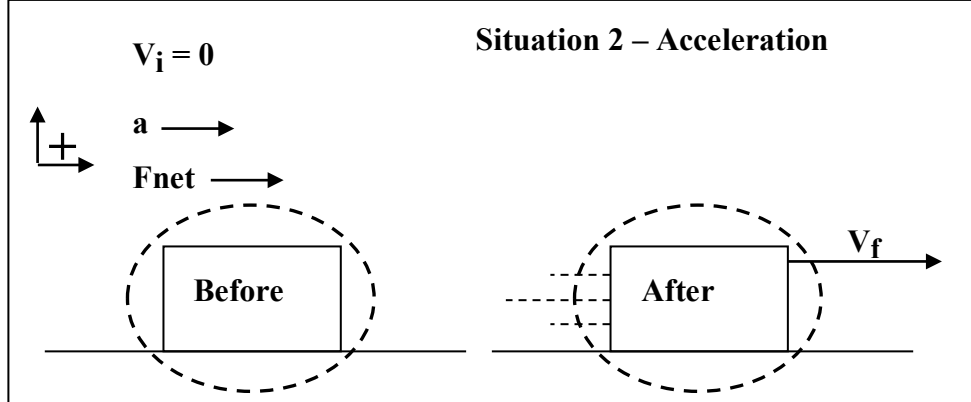
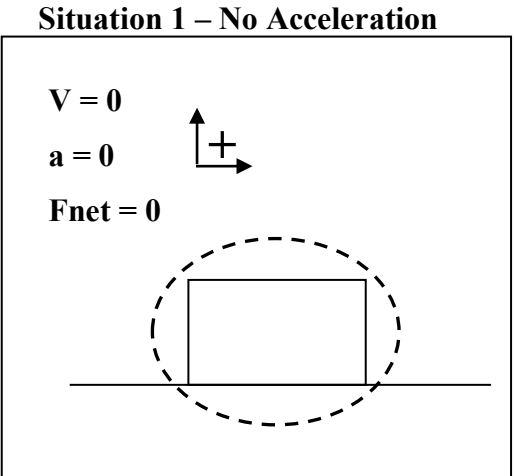


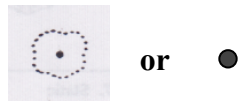
Steps to make a Force Diagram (AKA: Free-Body Diagram):

- 1. Define the system → 
- 2. Define the direction of positive → 

3. Label if there is Acceleration, Net Force, Initial and Final Velocity. If you have acceleration then you have Net Force



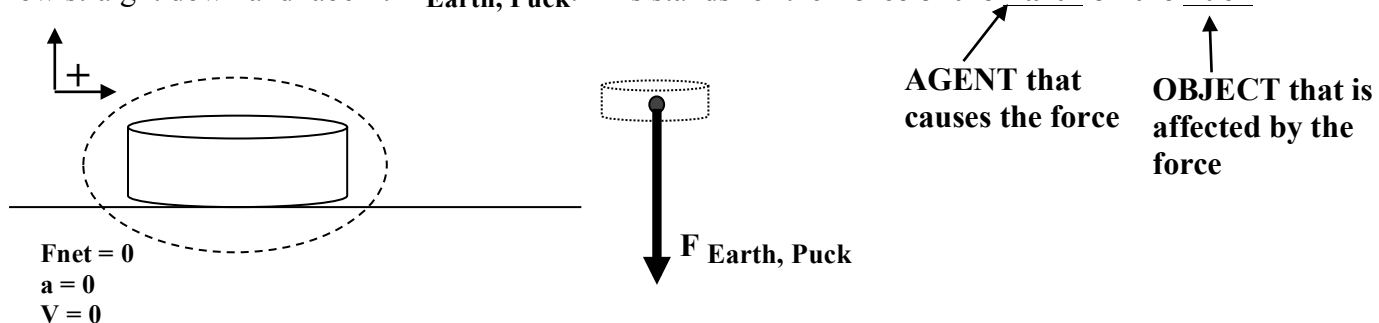
4. Draw a dot that represents the object in question.



Ask yourself the following 4 questions when making a Force Diagram (Free-Body Diagram):

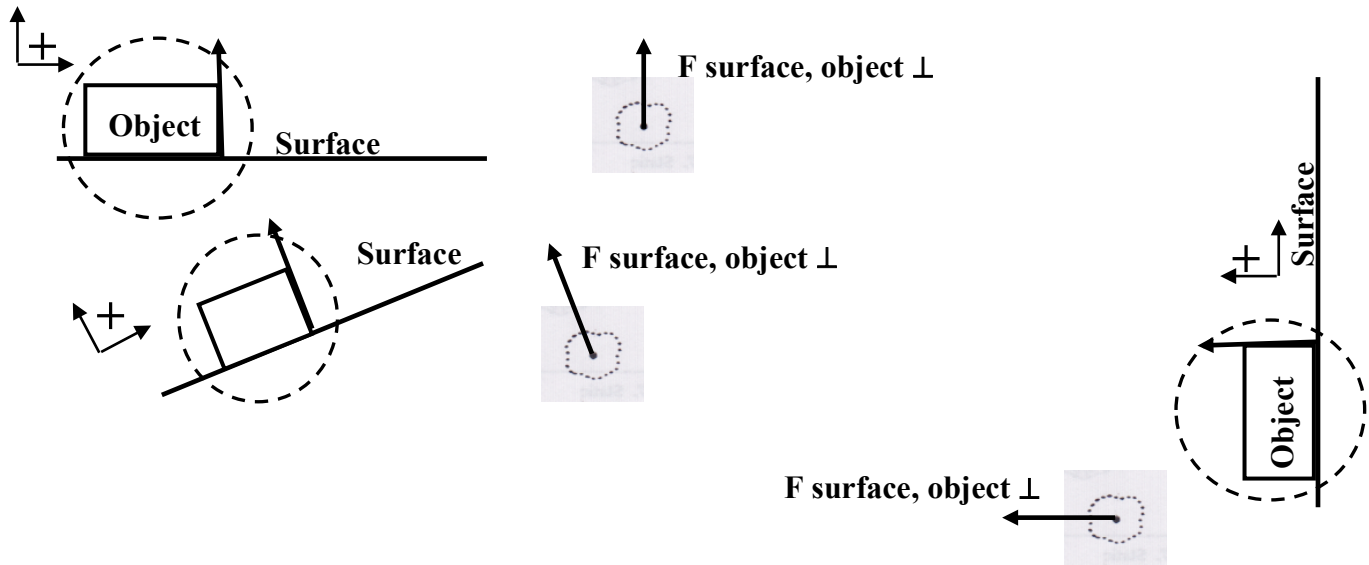
1. Is it on Earth?

(HINT: It is always **yes** for us!!! This is called “**Weight**” and mistakenly called “gravity”) Draw an arrow straight down and label it $F_{\text{Earth, Puck}}$. This stands for the **Force of the Earth on the Puck**

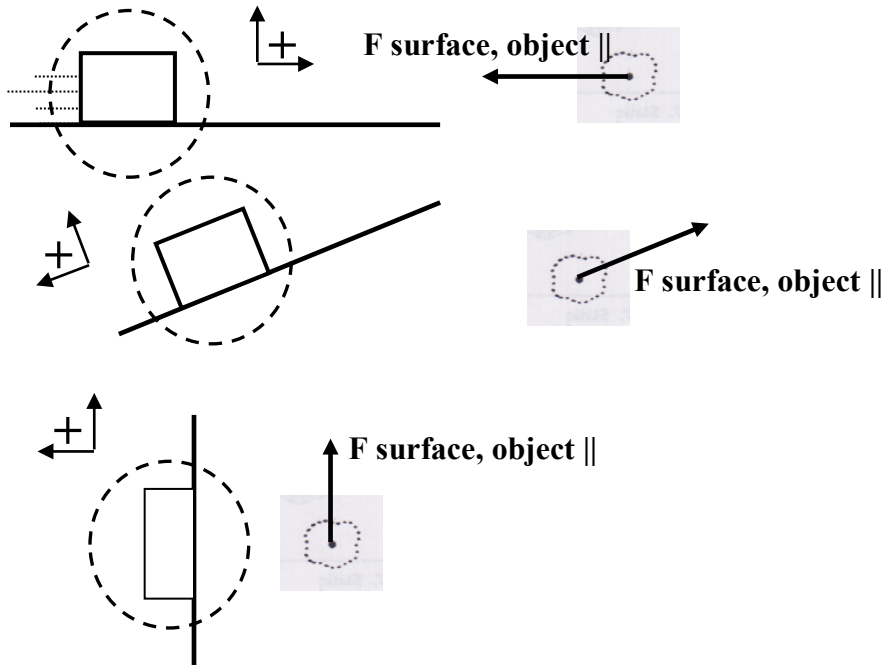


2. Is it touching a surface?

a. If yes, ALWAYS Draw the **Normal** (Normal means 90 degrees to surface) **Force**,
Label it as **F surface, object \perp**



b. Is there **friction**? If yes, Draw the **F surface, object \parallel** (The force is parallel to surface)



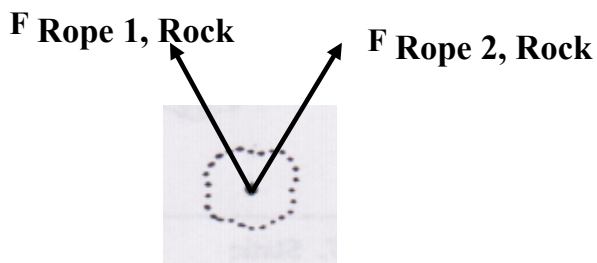
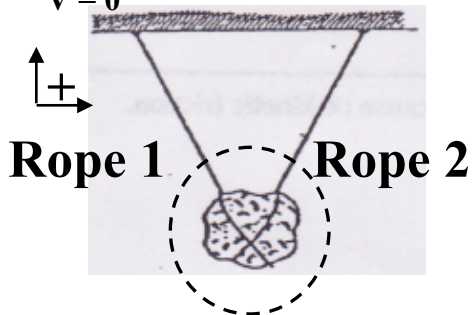
3. Is a rope, string, chain, or spring pushing or pulling it (TENSION)?

If yes draw in the Force of Rope on object pointing in the direction the rope is attached to the object.

$$a = 0$$

$$F_{\text{net}} = 0$$

$$V = 0$$



4. **Is anything else pushing or pulling on the object?** Hand, foot, air, magnets, a rabbit with REALLY big teeth, a duck, a witch, a European swallow but not an African swallow because they are non-migratory, or comfy chair, etc