

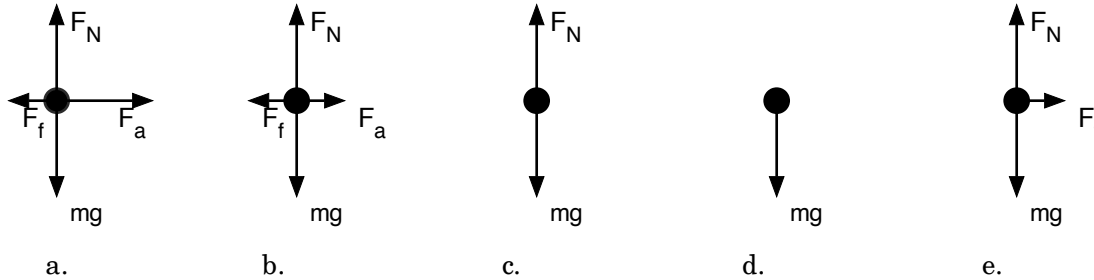
Newton's 1st Law Force Diagrams

A "Free-Body Diagram" is just a sketch showing all the forces acting on an object, but taking care to label the forces correctly and show the correct directions.

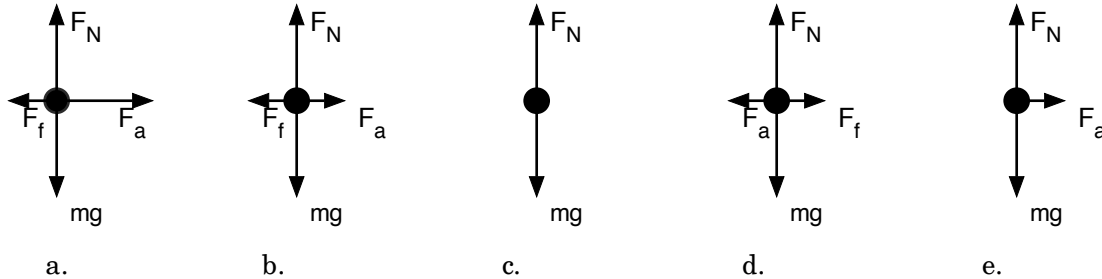
Common forces that may be present:

- F_W – Force of weight (force of gravity)
- F_T - Force of tension (force in a string or a cable)
- F_N – Normal force (support force of the ground on an object)
- F_f or F_{drag} – Force of friction or force of air drag
- F_{lift} – Lift force of the propellers or wings of an airplane
- $F_{applied}$ – Force applied to an object.

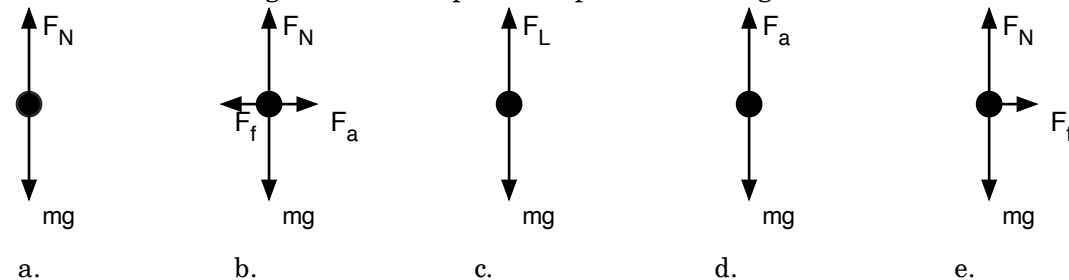
1. Which of the following would best represent a person standing still in the hallway?



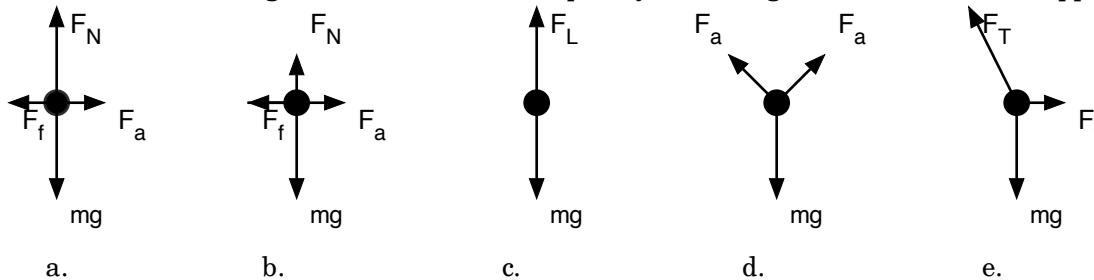
2. Which of the following would best represent a person being pulled to the right at constant speed?



3. Which of the following would best represent a person standing still in an elevator?



4. Which of the following would show forces completely cancelling out? (Circle all that apply.)



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For each of the following, sketch a "Free Body Diagram," which is a labeled diagram of all the forces acting on the object.

1. A car traveling to the right at a constant speed.
2. An airplane flying to the right at constant velocity.
3. A helicopter hovering above the ground.
4. A person riding in an elevator moving up with constant speed.
5. A helicopter coming down at constant speed.
6. A mass m suspended from two cables both at 20° from vertical.
7. A mass m suspended from two cables. One cable is at 20° from vertical and the other is at 70° from vertical.
8. A student pushing a fellow student on a skateboard to the left at a constant speed.
9. What do all of those examples have in common? How does this relate to Newton's 1st Law?