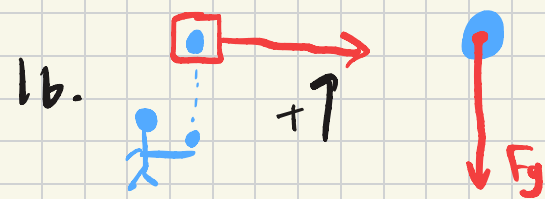1a. If an object has a single force acting on it ONLY, it is impossible for the object to have zero acceleration due to Newton's 2nd Law always being unbalanced.
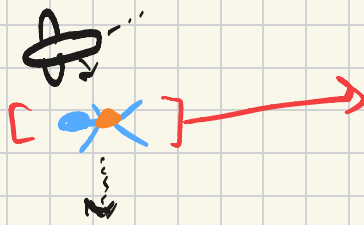
1b.

Since F_g is always present, accel is not zero.

$$a = -g$$

1c. Since velocity $\neq$ acceleration, acceleration due to gravity will still be $-9.8 \, m/s^2$.

1d. Since there is no drag force in a vacuum, velocity will be larger since there is no opposing force.

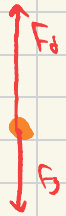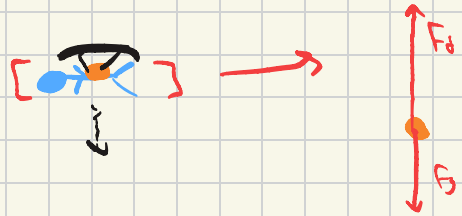| w/ resistance	In vacuum

2a. I am assuming drag resistance because this is a real life scenario. There is also gravitational force since this person is in free fall.

2b. Once the chute is pulled, the drag force becomes greater than the gravitational since the person starts slowing down.

2c.

F

initial dive

$|g| > |F_d|$

Parachute Pulled

$|F_g| < |F_d|$

$v=0$

$F_{net} = 0$

Assuming positive is ↓