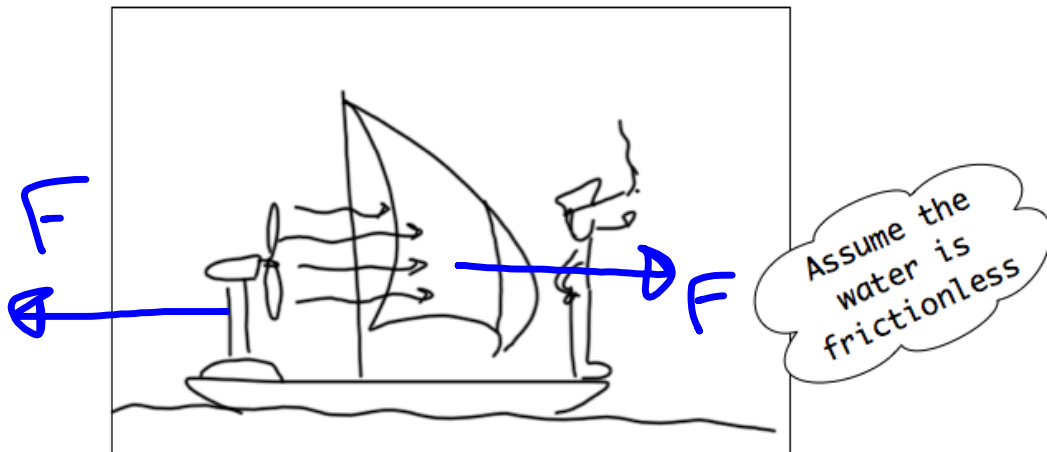


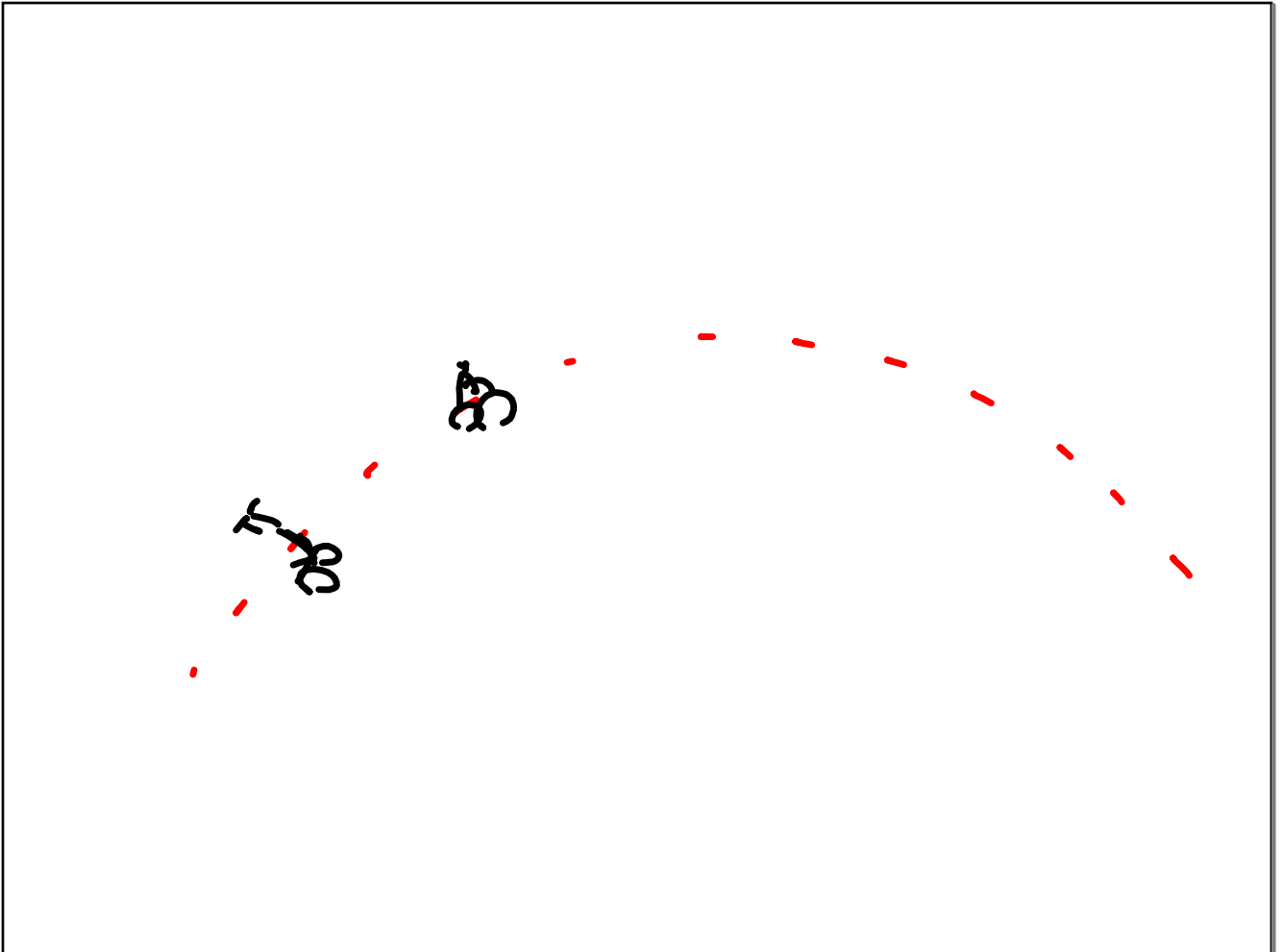
Sailboat Thought Experiment



You are out sailing on the lake, when the wind suddenly dies down and you are at rest. You seem to be stuck in the middle of the lake.

But you have an idea. You have a powerful fan on board - you take it and set it up to blow into the sail.

Does this propel your boat? NO!



Forces that are internal to an object (or objects that are attached) cancel out.

You can't change speed or direction with an internal force; you need a force from an external object.

A. Left hand pushes right hand.

B. Right hand pushes left hand.

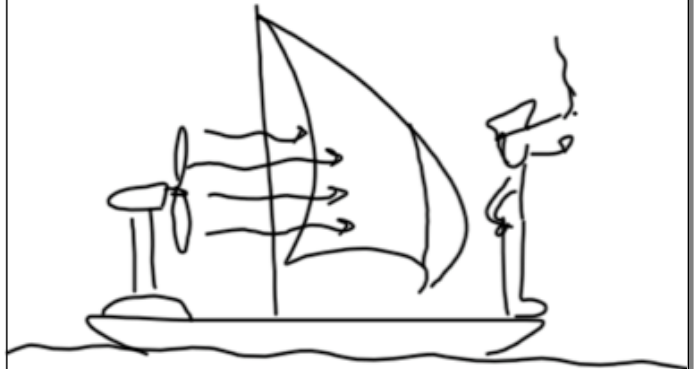
} cancel

1st Law of Motion (rephrase)

Objects maintain constant speed and direction unless there is an outside force.

holistic approach

Is it all one
connected object?



analytical approach

Draw an arrow for the force that is supposed to propel it. Figure out what provided that force and draw an arrow for its reaction. Are they on the same, connected object?