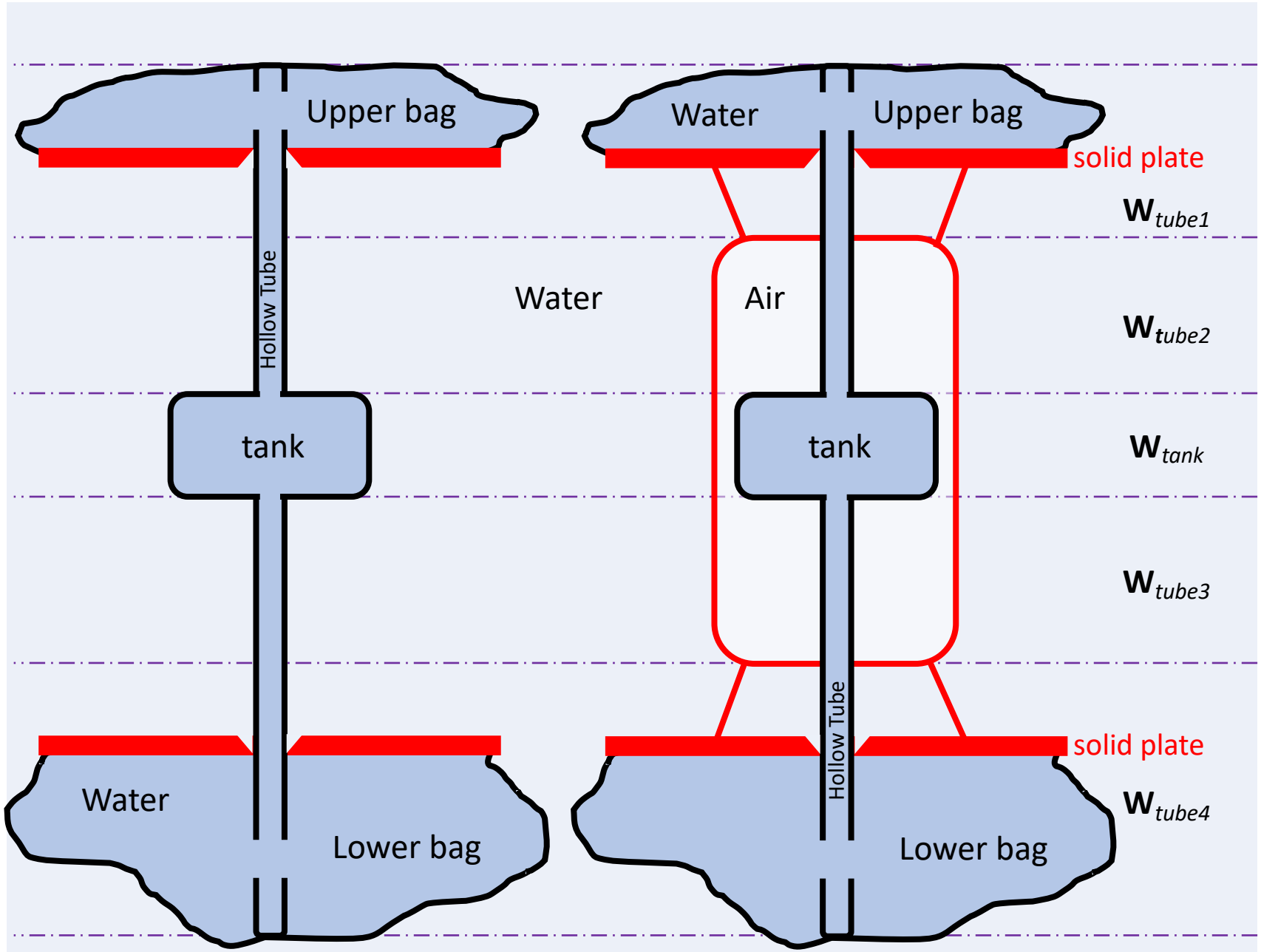

In figures A and B on the left,

- Both the light and dark blue are water with the same density
- The light blue water (outside) and dark blue water (trapped) are not in communication with each other
- Assume that the *Hollow Tube* slides past the solid plates frictionlessly and with a perfect seal
- The *Upper* and *Lower Bags* are made of a flexible membrane (such as rubber) of assumed neutral buoyancy
- The solid plate and air tank are fixed
- The total weight of material *without* water is:

$$W_{total} = W_{Tube1} + W_{Tube2} + W_{tank} + W_{Tube3} + W_{Tube4} + W_{UpperBag} + W_{LowerBag}$$

- The total weight of water is
- $$W^*_{total} = W^*_{Tube1} + W^*_{Tube2} + W^*_{tank} + W^*_{Tube3} + W^*_{Tube4} + W^*_{UpperBag} + W^*_{LowerBag}$$

My questions are:

a) What is the total downward force in Figure 1?

b) What is the total downward force in Figure 2?