Pinned kayak problem

Consider a kayak pinned against a rock by water moving with a speed of 2.0 m/s. It presents a cross-sectional area to the current of 1.9 m^2 but it is only 1/3 immersed - the kayak has ample floatation! Assume smooth downstream flow until the water hits with the kayak. The surface of the kayak is smooth and relatively hard so the coefficient of static friction between the kayak and the rock is 0.65. A rope is tied off to the kayak and a mechanical advantage Z-drag is used to pull sideways (perpendicular to the flow) to try to get the boat off the rock. Assume the rock has an upstream face that is flat and perpendicular to the current.

What is the force exerted by the moving water on the kayak?

What is the maximum value of the friction force that would prevent 'sideways' movement of the kayak?

When a rope is tied off to the kayak to pull it off the rock, explain the advantage of tying off to more than one part of the kayak.

Estimate how hard an adult could pull on a rope and use this to estimate how many people it would take to pull this kayak off the rock.