PHY121 Summer 2018
Pre-work for Monday 6/11

1. You are a passenger on a spacecraft. For your survival and comfort, the interior contains air just like that at the surface of the Earth. The craft is coasting through a very empty region of space. That is, a nearly perfect vacuum exists just outside the wall. Suddenly, a meteoroid pokes a hole, about the size of a large coin, right through the wall next to your seat.

   (a) What happens?

   (b) Is there anything you can or should do about it?

2. A typical silo on a farm has many metal bands wrapped around its perimeter for support, as shown in the figure below. Why is the spacing between successive bands smaller for the lower portions of the silo on the left, and why are double bands used at lower portions of the silo on the right?

3. The small piston of a hydraulic lift has a cross-sectional area of 3.00 cm^2, and its large piston has a cross-sectional area of 200 cm^2. How much downward force must be applied to the small piston for the lift to raise a load whose weight is 15.0 kN?