

23. We assume the fluid in the press is incompressible. Then, the work done by the output force is the same as the work done by the input force. If the large piston moves a distance  $D$  and the small piston moves a distance  $d$ , then  $fd = FD$  and

$$D = \frac{fd}{F} = \frac{(103\text{ N})(0.85\text{ m})}{20.0 \times 10^3\text{ N}} = 4.4 \times 10^{-3}\text{ m} = 4.4\text{ mm} .$$