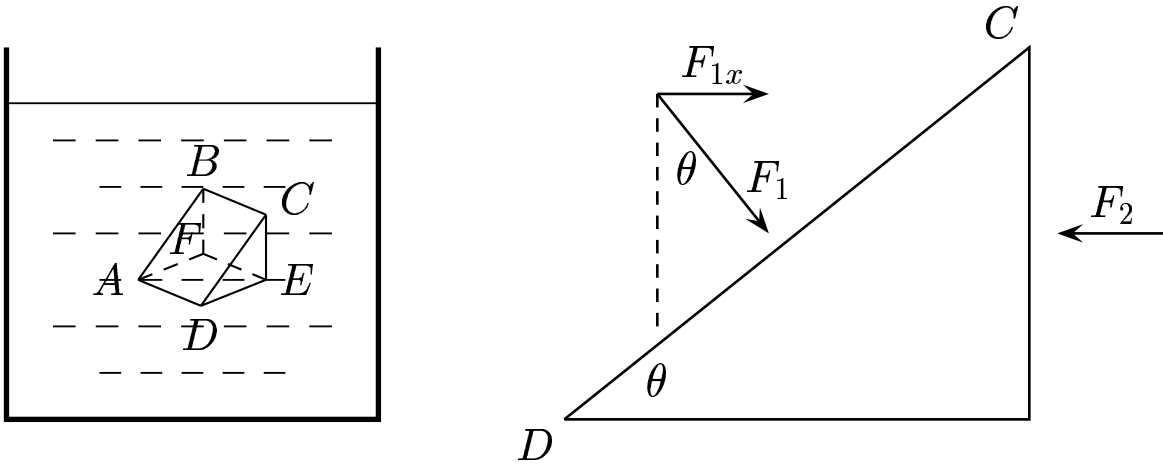


Consider a container filled with water. Imagine a small body of water in the shape of a rectangular prism. The inclined area  $ABCD$  is  $A_1$ . There is a normal force  $F_1$  exerts on it. The vertical plane  $BCEF$  has an area  $A_2$ . There is a normal force that  $F_2$  exerts on it.



Find the relationship between  $P_1 = \frac{F_1}{A_1}$  and  $P_2 = \frac{F_2}{A_2}$ .

- A)  $P_1 < P_2$ .
- B)  $P_1 = P_2$ .
- C)  $P_1 > P_2$ .

Equilibrium implies  $F_{1x} = F_2$ .

Geometry:  $\sin \theta = \frac{A_2}{A_1} = \frac{F_{1x}}{F_1}$ .

$$\frac{F_{1x}}{F_1} = \frac{F_2}{F_1}. \text{ So } \frac{A_2}{A_1} = \frac{F_2}{F_1}, \text{ or } P_1 = P_2.$$

Answer **B**.

15.01-01 Pressure Within a Fluid Body 2004-3-24