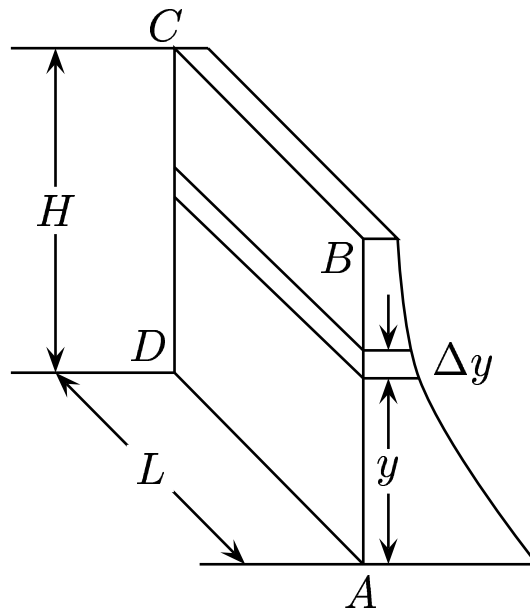


A dam has a height H and width L .



Find the total force F on the dam.

- A) $F = \rho g H (HL)$
- B) $F = \frac{1}{2} \rho g H (HL)$
- C) $F = \frac{1}{4} \rho g H (HL)$

$$F = \int_0^H \rho g (H - y) L dy.$$

From the integral defined above, one gets $F = \frac{1}{2} \rho g H (HL)$. Intuitive reasoning: The total force equals to the average pressure times the area, where the average pressure is given by the average of 0 and the maximum value.

Answer **B**.