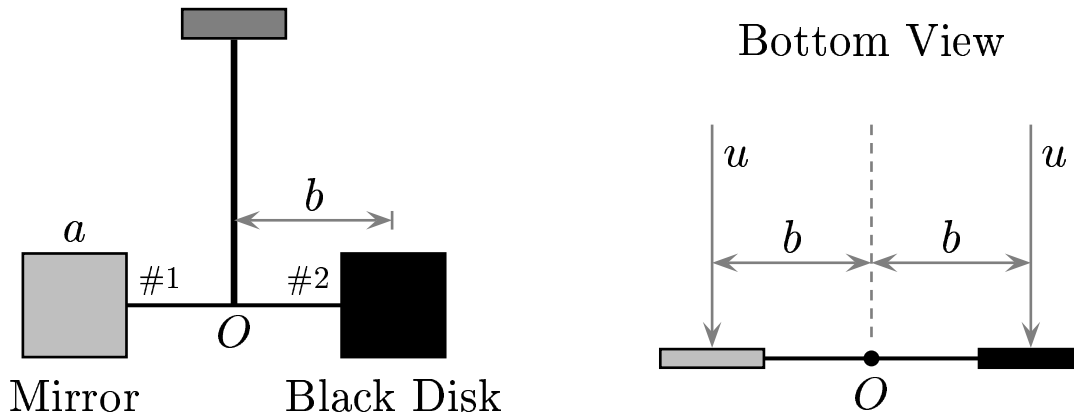


Two squares with identical mass  $m$ , and area of  $a \times a$ . As indicated in the sketch, #1 is totally reflective and #2 totally absorptive. A light with an energy density  $u$  is striking both surfaces perpendicularly.



Find the direction of the torque  $\tau$  about  $O$  as viewed from the bottom.

- A) The direction viewed from the bottom is clockwise.
- B) The torque about  $O$  is  $p = 0$ , so  $\tau = 0$ , the direction can not be determined.
- C) The direction viewed from the bottom is counterclockwise.

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The torque due to the reflection of the mirror about  $O$  is  $\tau_1 = F_1 b = 2 P a^2 b = 2 u a^2 b$ . The torque due to the reflection of the black disk about  $O$  is  $\tau_2 = F_2 b = P a^2 b = u a^2 b = \frac{\tau_1}{2}$ . Thus the torque from the mirror is greater, or the net torque is counterclockwise as viewed from the bottom.

Answer **C**.