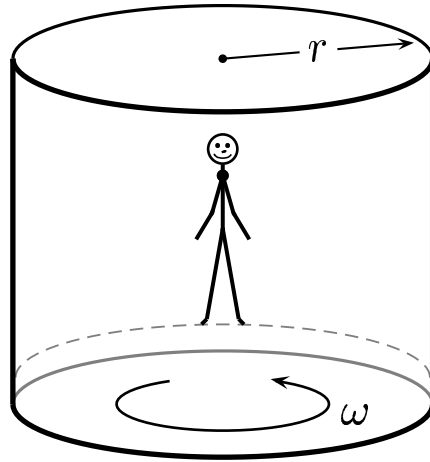


A “Barrel of Fun” consists of a large vertical cylinder that spins about its axis fast enough that any person inside will be held against the wall.

Assume: The angular speed  $\omega_1$ , due to a certain upward frictional force  $f_1$ , holds a person against the wall without slipping.



What is the friction force  $f_2$ , if the angular speed is doubled; *i.e.*,  $\omega_2 = 2\omega_1$ .

- A)  $f_2 = 4 f_1$ .
- B)  $f_2 = 2 f_1$ .
- C)  $f_2 = f_1$ .
- D)  $f_2 = \frac{1}{2} f_1$ .

For the person to be held up against the wall, the net vertical force on the person is zero.

So  $f_1 = m g$  and also  $f_2 = f_1 = m g$ .

Answer **C**.

06.01-06 Barrel of Fun 2004-3-24