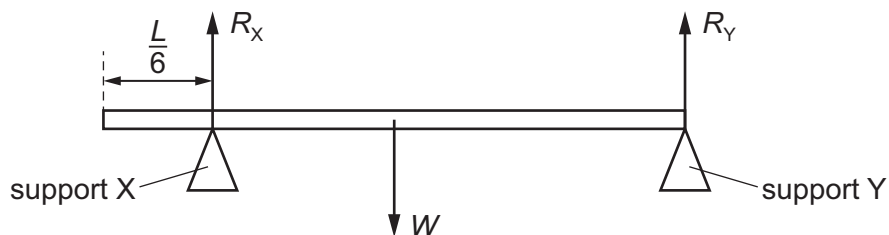


- 12 A uniform bar of length  $L$  and weight  $W$  rests horizontally on two supports X and Y.



Support X exerts a vertical force  $R_X$  at a distance of  $\frac{L}{6}$  from one end of the bar.

Support Y exerts a vertical force  $R_Y$  at the other end of the bar.

The bar is in equilibrium.

What is the ratio  $\frac{R_X}{R_Y}$ ?

A  $\frac{3}{2}$

B  $\frac{2}{3}$

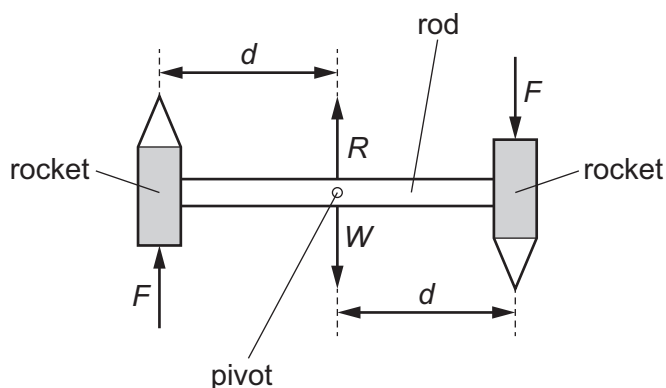
C  $\frac{3}{5}$

D  $\frac{2}{5}$

- 13 A type of firework is made by connecting two rockets, facing in opposite directions, to a rod, as shown.

The rod is attached to a frictionless pivot so that the firework can rotate in a vertical plane.

The firework has weight  $W$ . The pivot exerts a force  $R$  on the rod that is equal and opposite to  $W$ .



Each rocket exerts a force of magnitude  $F$  on the rod at a perpendicular distance  $d$  from the pivot. The forces exerted by the rockets are always in opposite directions.

Air resistance is negligible.

Which statement is correct?

- A The firework is in equilibrium because the resultant force acting on it is zero.
- B The firework is in equilibrium because the resultant torque acting on it is zero.
- C The firework is not in equilibrium because the resultant force acting on it is not zero.
- D The firework is not in equilibrium because the resultant torque acting on it is not zero.