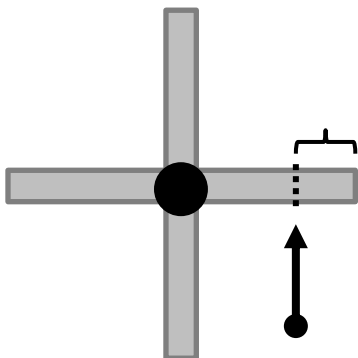## ANGULAR MOMENTUM OF OBJECTS IN LINEAR MOTION

● In some problems, an object moving in a straight line collides against an object fixed in a rotating axis:

    - Remember we used Linear Momentum to solve Collision problems!

    - BUT in this case, we need the first object's _____ Momentum, not its _____ Momentum.

        - But how do you get the _____ Momentum of an object that is moving in a straight line**?!?**

    - An object in a straight line has Angular Momentum relative to *unrelated* axis of rotation → **L = _____**

        - Notice that this is the SAME equation as the Angular Momentum of a _____**.**

EXAMPLE**:** Two rotating doors, each 6.0 m long, are fixed to the same central axis of rotation, as shown above (top view). Suppose a 4 kg bird flying with 30 m/s horizontal is about to collide against the door, at a point 50 cm from one end. Calculate the bird's angular momentum about the axis through the center of the door, just before hitting the door**.**

→ Later we will see how to FULLY solve these types of Rotational Collisions**! (**For now, contain your excitement, please**!)**