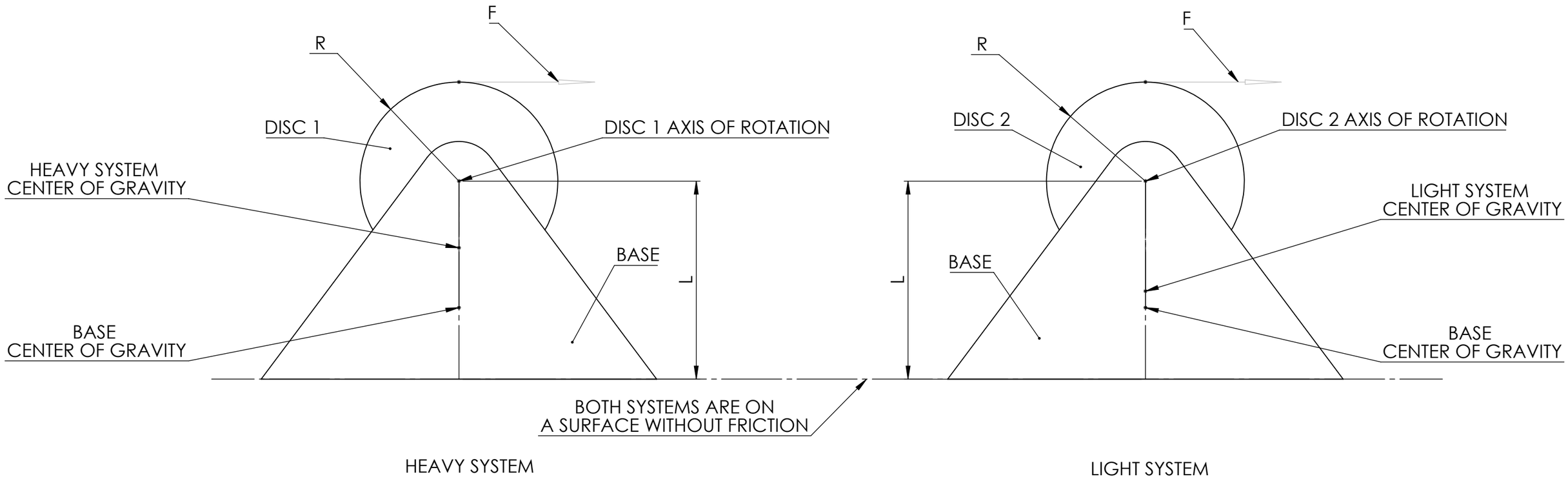
PROBLEM:
Two systems are placed on a surface without friction. Each system consists of a uniform disc and a base that supports the disc's axis. Both of the disks can rotate around that axis which is a distance L from the surface. The dimensions of the two systems are identical. The only difference between the systems is the masses of the discs.
Disc 1 is heavier than the Disc 2. Disc 1 is also heavier than the base, but Disc 2 is lighter than the base. The system starts at a complete stand still. No movement, no disc rotation.
A force F is applied for a time t on to a point of both discs as shown on the diagram.

QUESTIONS:
1. What is the direction and size of the force that is acting on the heavy system?
2. What is the direction and size of the force that is acting on the light system?
3. Which system will move more due to the force F?



HEAVY SYSTEM

LIGHT SYSTEM

NOTES:
- UNIFORM DISC 1 MASS m1
- UNIFORM DISC 2 MASS m2
- BASE MASS m3
- m1>m2
- m1>m3
- m2<m3
- HEAVY SYSTEM MASS m4 = m1+m3
- LIGHT SYSTEM MASS m5 = m2 + m3
- m4>m5
- BOTH DISCS HAVE SAME RADIUS - R
- BOTH DISCS HAVE THE SAME FORCE - F APPLIED FOR THE SAME AMOUNT OF TIME t
- DISC ROTATE WITHOUT FRICTION
- BOTH SYSTEMS ARE ON A SURFACE WITHOUT FRICTION