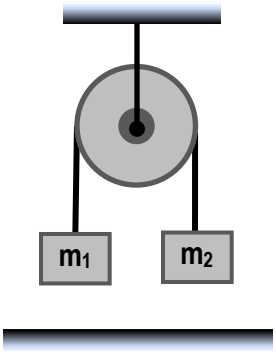
TORQUE ON DISCS / PULLEYS

● Problems of Torques on discs are common, and will be useful later**.**

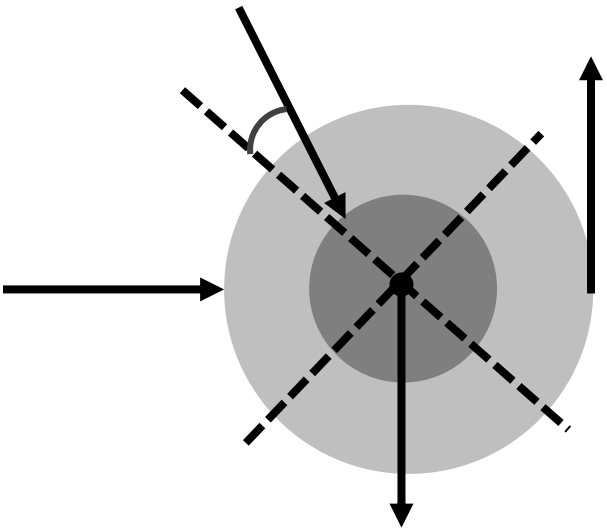
- Note that what matters is **r** (axis to force), not radius R →

EXAMPLE**:** Two masses **(m_1** = 4 kg**, m_2** = 5 kg**)** are connected by a light string which is passed through the edge of a solid cylinder **(m_3** = 10 kg**,** radius = 3 m**)**, as shown. The system is free to rotate about an axis perpendicular to the cylinder and through its center. Calculate the Net Torque produced on the cylinder, about its central axis, when you release the blocks**.**



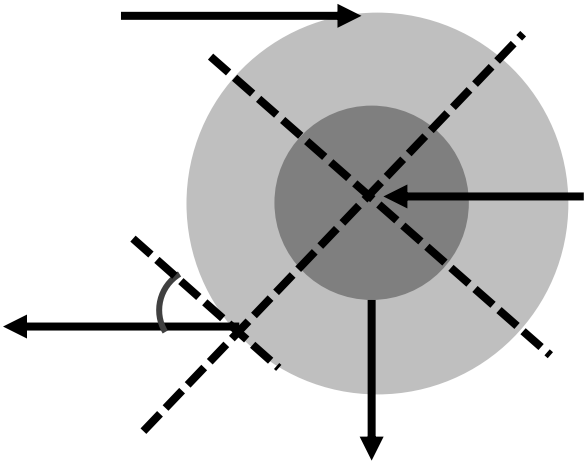
EXAMPLE: TORQUES ON A DISC

EXAMPLE**:** The composite disc below is free to rotate about a fixed axis, perpendicular to it and through its center. All forces are 100 N, and all angles are 37**º.** The dotted lines are either exactly parallel or exactly perpendicular to each other. The inner (darker) and outer (lighter) discs have radii 3 m and 5 m, respectively. Calculate the Net Torque produced on the composite disc, about an axis perpendicular to it and through its center. Use **+/–** to indicate direction**.**



PRACTICE: TORQUES ON A DISC

PRACTICE**:** The composite disc below is free to rotate about a fixed axis, perpendicular to it and through its center. All forces are 100 N, and all angles are 37**º.** The dotted lines are either exactly parallel or exactly perpendicular to each other. The inner (darker) and outer (lighter) discs have radii 3 m and 5 m, respectively. Calculate the Net Torque produced on the composite disc, about an axis perpendicular to it and through its center. Use **+/–** to indicate direction**.**



PRACTICE: TORQUES ON A SQUARE

PRACTICE**:** A square with sides 4 m long is free to rotate around an axis perpendicular to its face and through its center. All forces shown are 100 N and act simultaneously on the square. The angle shown is 30º. Calculate the Net Torque that the forces produce on the square, about its axis of rotation**.**