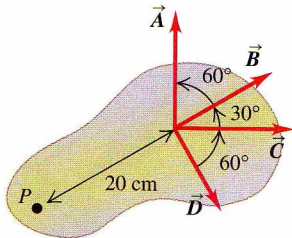
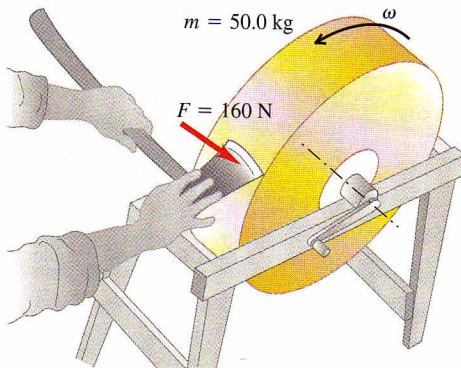


4. • In Figure 10.44, forces \vec{A} , \vec{B} , \vec{C} , and \vec{D} , each have magnitude 50 N and act at the same point on the object. (a) What torque (magnitude and direction) does each of these forces exert on the object about point P ? (b) What is the total torque about point P ?



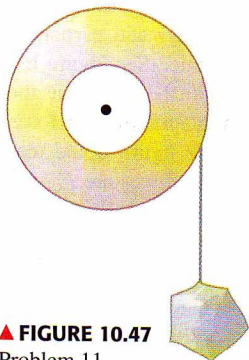
▲ FIGURE 10.44 Problem 4.

7. • A certain type of propeller blade can be modeled as a thin uniform bar 2.50 m long and of mass 24.0 kg that is free to rotate about a frictionless axle perpendicular to the bar at its midpoint. If a technician strikes this blade with a mallet 1.15 m from the center with a 35.0 N force perpendicular to the blade, find the maximum angular acceleration the blade could achieve.
9. •• A grindstone in the shape of a solid disk with diameter 0.520 m and a mass of 50.0 kg is rotating at 850 rev/min. You press an ax against the rim with a normal force of 160 N (see Figure 10.46), and the grindstone comes to rest in 7.50 s. Find the coefficient of kinetic friction between the ax and the grindstone. There is negligible friction in the bearings.



▲ FIGURE 10.46 Problem 9.

11. •• A 2.00 kg stone is tied to a thin, light wire wrapped around the outer edge of the uniform 10.0 kg cylindrical pulley shown in Figure 10.47. The inner diameter of the pulley is 60.0 cm, while the outer diameter is 1.00 m. The system is released from rest, and there is no friction at the axle of the pulley. Find (a) the acceleration of the stone, (b) the tension in the wire, and (c) the angular acceleration of the pulley.



▲ FIGURE 10.47 Problem 11.