

45. ●● A shower head has 20 circular openings, each with radius 1.0 mm. The shower head is connected to a pipe with radius 0.80 cm. If the speed of water in the pipe is 3.0 m/s, what is its speed as it exits the shower-head openings?
47. ● A small circular hole 6.00 mm in diameter is cut in the side of a large water tank, 14.0 m below the water level in the tank. The top of the tank is open to the air. Find the speed at which the water shoots out of the tank.
48. ● A sealed tank containing seawater to a height of 11.0 m also contains air above the water at a gauge pressure of 3.00 atm. Water flows out from the bottom through a small hole. Calculate the speed with which the water comes out of the tank.
51. ●● **Lift on an airplane.** Air streams horizontally past a small airplane's wings such that the speed is 70.0 m/s over the top surface and 60.0 m/s past the bottom surface. If the plane has a mass of 1340 kg and a wing area of 16.2 m², what is the net vertical force (including the effects of gravity) on the airplane? The density of the air is 1.20 kg/m³.