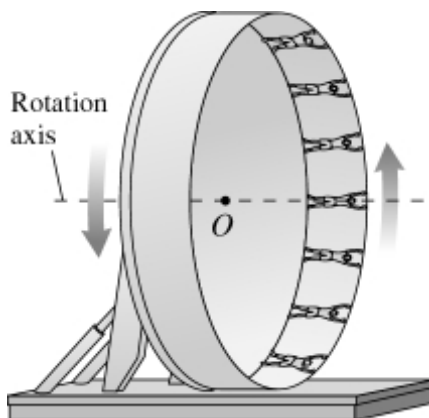


MULTIPLE CHOICE. Choose the one alternative that BEST completes the statement or answers the question, and mark your scan sheet (only the scan sheet will be graded).

- 1) A 12 kg block on a table is connected by a string to a 26 kg mass, which is hanging over the edge of the table. If the 12 kg block is 3.1 m from the edge of the table, how much time will pass before the block falls off the table from when the other block is released? Assume that frictional forces may be neglected.

A) 0.82 s                      B) 0.96 s                      C) 0.58 s                      D) 0.68 s

- 2) In an amusement park ride passengers stand inside an 8 m radius cylinder. Initially the cylinder rotates with its axis oriented along the vertical. After the cylinder has acquired sufficient speed, it tilts into a vertical plane, that is, the axis tilts into the horizontal, as shown in the figure. Suppose that, once the axis has tilted into the horizontal, the ring rotates once every 4.5 s. If a rider's mass is 70 kg, with how much force does the ring push on her at the top of the ride?



A) 1100 N                      B) 410 N                      C) 690 N                      D) 1800 N

- 3) A golf ball of mass 0.050 kg has a velocity of 102 m/s immediately after being struck. If the club and ball were in contact for 0.59 ms, what is the average force exerted on the ball?

A) 9.7 kN                      B) 8.6 kN                      C) 7.5 kN                      D) 6.7 kN

- 4) A car heading north collides at an intersection with a truck heading east. If they lock together and travel at 28 m/s at  $46^\circ$  north of east just after the collision, how fast was the car initially traveling? Assume that the two vehicles have the same mass.

A) 30 m/s                      B) 40 m/s                      C) 80 m/s                      D) 20 m/s

- 5) How much work must be done by frictional forces in slowing a 1000.0 kg car from 29.8 m/s to rest?

A)  $5.33 \times 10^5$  J                      B)  $3.55 \times 10^5$  J                      C)  $6.22 \times 10^5$  J                      D)  $4.44 \times 10^5$  J

- 6) A block starts from rest at the top of a  $31.0^\circ$  inclined plane and encounters a spring, of constant 3.4 kN/m, rigidly attached to the plane. If the block's mass is 33.0 kg and it compresses the spring by 37.0 cm, find the distance the block travelled before it encountered the spring.

A) 74 m                      B) 82.6 cm                      C) 137 cm                      D) 1.0 m