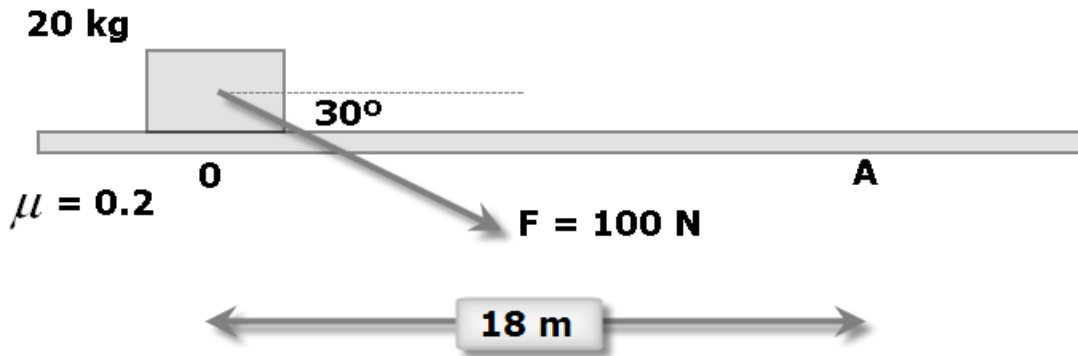


EXAM: DYNAMICS

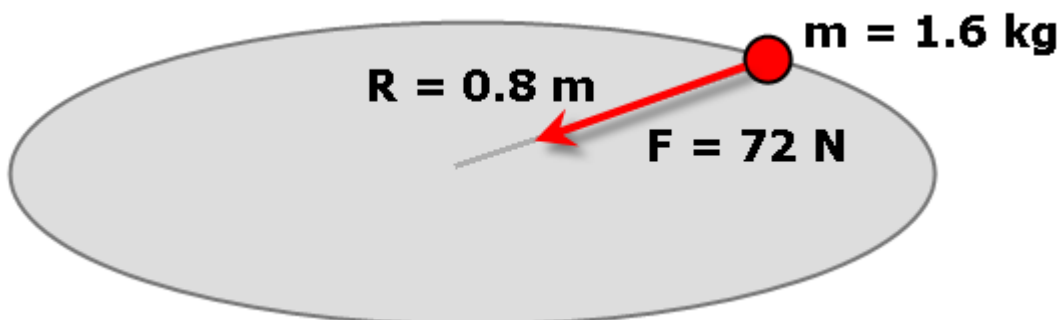
Name:

Group:

- 1 A body is moving according to the picture below. Initially, the body is at rest. Determine:
- a) the value of the normal force (0.5 POINT)
 - b) the acceleration of the body (1 POINT)
 - c) the velocity of the body at point "A" (1 POINT)
- 2.5 POINTS
ESTIMATED TIME: 15 min



- 2 The body is rotating due to a centripetal force (tension) of 72 N. The mass of the body is 1.6 kg and the radius of the circle is 0.8 m. Determine:
- a) the centripetal acceleration (0.5 POINTS)
 - b) the angular (in rad/s and rpm) and linear velocities (1 POINT)
 - c) the frequency and the period of the motion (0.5 POINTS)
 - d) the number of revolutions performed in 15 minutes (0.5 POINTS)
- 2.5 POINTS
ESTIMATED TIME: 10 min



3 Two bodies collide as shown in the picture. Determine:

a) the velocity after the collision (suppose that both bodies are moving together after the collision) (1.5 POINTS)

b) if after the collision a force of $20 \vec{i}$ (N) is applied during 10 seconds, what is the final velocity? (1 POINT)

2.5 POINTS
ESTIMATED TIME: 10 min



4 Two bodies are moving as shown in the picture. The acceleration of the system is 2 m/s^2 . Determine:

a) the friction force and friction coefficient (1.5 POINTS)

b) the tension of the rope (1 POINT)

2.5 POINTS
ESTIMATED TIME: 15 min

