Quiz 4

Due: 11:59pm on Wednesday, November 12, 2014

You will receive no credit for items you complete after the assignment is due. Grading Policy

Conceptual Question 7.01

Part A

You swing a bat and hit a heavy box with a force of 1500 N. The force the box exerts on the bat is

ANSWER:

- greater than 1500 N if the bat bounces back.
- exactly 1500 N only if the box does not move.
- less than 1500 N if the box moves.
- exactly 1500 N whether or not the box moves.
- greater than 1500 N if the box moves.

Correct

Conceptual Question 7.02

Part A

In order to get an object moving, you must push harder on it than it pushes back on you.

ANSWER:

- True
- False

Correct

Conceptual Question 7.05

Part A

A 20-ton truck collides with a 1500-lb car and causes a lot of damage to the car. During the collision

ANSWER:

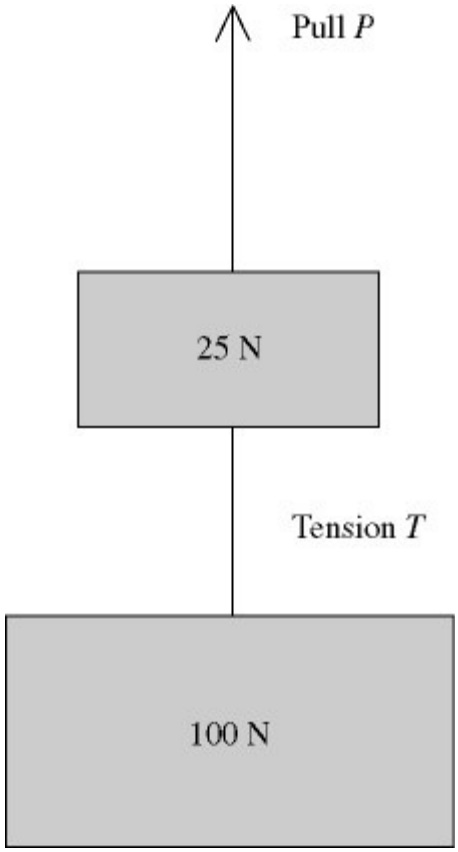
- the force of on the truck due to the collision is exactly equal to the force on the car.
- the car and the truck have the same magnitude acceleration.
- the force on the car due to the collision is much greater than the force on the truck.
- the force on the truck due to the collision is slightly greater than the force on the car.

Correct

Conceptual Question 7.06

Part A

Two weights are connected by a massless wire and pulled upward with a constant speed of 1.50 m/s by a vertical pull P. The tension in the wire is T (see figure). Which one of the following relationships between T and P must be true?



ANSWER:

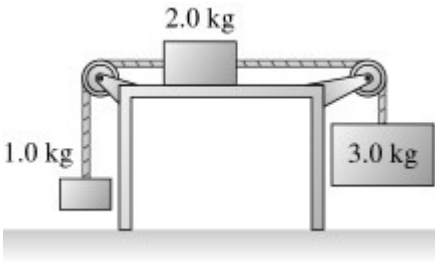
- $T = P$
- $T > P$
- $P = T$ + 25 N
- $P + T$ = 125 N
- $P = T$ + 100 N

Correct

Problem 7.19

Part A

Three objects are connected as shown in the figure. The strings and frictionless pulleys have negligible masses, and the coefficient of kinetic friction between the 2.0-kg block and the table is 0.44. What is the acceleration of the 2.0-kg block?



ANSWER:

- 3.0 m/s^2
- 1.3 m/s^2
- 2.4 m/s^2
- 1.8 m/s^2

Correct

Conceptual Question 8.02

Part A

A string is attached to the rear-view mirror of a car. A ball is hanging at the other end of the string. The car is driving around in a circle, at a constant speed. Which of the following lists gives all of the forces directly acting on the ball?

ANSWER:

- tension, gravity, the centripetal force, and friction
- tension, gravity, and the centripetal force
- tension
- tension and gravity

Correct

Problem 8.03

Part A

A car enters a 300-m radius horizontal curve on a rainy day when the coefficient of static friction between its tires and the road is 0.600. What is the maximum speed at which the car can travel around this curve without sliding?

ANSWER:

- 42.0 m/s
- 33.1 m/s
- 24.8 m/s
- 29.6 m/s
- 37.9 m/s

Correct

Problem 8.08

Part A

A 600-kg car traveling at 30.0 m/s is going around a curve having a radius of 120 m that is banked at an angle of 25.0°. The coefficient of static friction between the car's tires and the road is 0.300. What is the magnitude of the force exerted by friction on the car?

ANSWER:

- 795 N
- 1590 N
- 7820 N
- 3430 N
- 7240 N

Correct

Problem 8.01

Part A

A 65 kg mass is connected to a nail on a frictionless table by a massless string 1.3 m long. There is no appreciable friction between the nail and the string. If the tension in the string is 51 N while the mass moves in a uniform circle on the table, how long does it take for the mass to make one complete revolution?

ANSWER:

- 6.5 s
- 7.5 s
- 8.8 s
- 8.1 s

Correct

Problem 8.12

Part A

Future space stations will create an artificial gravity by rotating. Consider a cylindrical space station 880 m diameter rotating about its central axis. Astronauts walk on the inside surface of the space station. What rotation period will provide "normal" gravity?

ANSWER:

- 60 s
- 6.7 s
- 9.5 s
- 42 s

Correct

Score Summary:

Your score on this assignment is 81.7%.
You received 8.17 out of a possible total of 10 points.