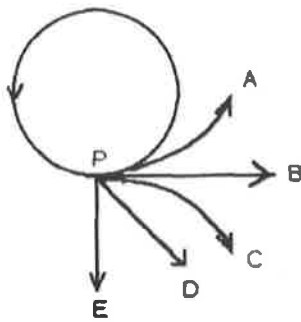


Ch5MidYrReview

5.1 Conceptual Questions

- _____ 1) In a collision between a huge SUV and a small hybrid car, the SUV exerts a larger force on the hybrid than the hybrid exerts on the SUV.
- A) True
B) False
C) It depends on whether the collision is a head-on collision or a rear-end collision.
- _____ 2) A girl attaches a rock to a string, which she then swings counter-clockwise in a horizontal circle. The string breaks at point P in the figure, which shows a bird's-eye view (as seen from above). Which path (A-E) will the rock follow?



- A) Path A
B) Path B
C) Path C
D) Path D
E) Path E
- _____ 3) If you pound a feather with a hammer, which one feels a greater force?
- A) always the feather
B) always the hammer
C) The size of the force is always exactly the same on both of them.
D) If the feather moves, then it felt the greater force. Otherwise the force was the same on both.
- _____ 4) You pull on a crate with a rope. If the crate moves, the rope's pull on the crate must have been larger than the crate's pull on the rope, but if the crate does not move, both of these pulls must have been equal.
- _____ 5) While flying horizontally in an airplane, you notice that a string dangling from the overhead luggage compartment hangs at rest at 15° away from the vertical toward the front of the plane. Using this observation, you can conclude that the airplane is
- A) moving forward.
B) moving backward.
C) accelerating forward.
D) accelerating backward.
E) not accelerating because the string is at rest.

- _____ 6) An elevator suspended by a vertical cable is moving downward but slowing down. The tension in the cable must be
- A) greater than the weight of the elevator.
 - B) less than the weight of the elevator.
 - C) equal to the weight of the elevator.
- _____ 7) A crate is sliding down an inclined ramp at a constant speed of 0.55 m/s. The vector sum of all the forces acting on this crate must point
- A) down the ramp.
 - B) up the ramp.
 - C) perpendicular to the ramp.
 - D) vertically downward.
 - E) None of the above choices is correct.
- _____ 8) An object is moving with constant non-zero velocity. Which of the following statements about it *must* be true?
- A) A constant force is being applied to it in the direction of motion.
 - B) A constant force is being applied to it in the direction opposite of motion.
 - C) A constant force is being applied to it perpendicular to the direction of motion.
 - D) The net force on the object is zero.
 - E) Its acceleration is in the same direction as its velocity.
- _____ 9) A 20-ton truck collides with a 1500-lb car. Which of the following statements must be true?
- A) During the collision, the force on the truck is greater than the force on the car.
 - B) During the collision, the force on the truck is equal to the force on the car.
 - C) During the collision, the force on the truck is smaller than the force on the car.
 - D) The truck did not slow down during the collision, but the car did.
 - E) The car did not slow down during the collision, but the truck did.
- _____ 10) A horse pulls a cart with force \vec{F} . As a result of this force the cart accelerates with constant acceleration. The magnitude of the force that the cart exerts on the horse
- A) is zero newtons.
 - B) equal to the magnitude of \vec{F} .
 - C) less than the magnitude of \vec{F} .
 - D) greater than the magnitude of \vec{F} .
 - E) cannot be determined without knowing the mass of the horse.
- _____ 11) A person is using a rope to lower a 5.0-N bucket into a well with a constant speed of 2.0 m/s. What is the magnitude of the force exerted by the rope on the bucket?
- A) 0.00 N
 - B) 2.0 N
 - C) 5.0 N
 - D) 10 N
 - E) 49 N

- _____ 12) A person who normally weighs 700 N is riding in a rather swift elevator that is moving at a constant speed of 9.8 m/s. If this person is standing on a bathroom scale inside the elevator, what would the scale read?
- A) more than 700 N
 - B) less than 700 N
 - C) 700 N
 - D) It could be more or less than 700 N, depending on whether the elevator is going up or down.

5.2 Problems

- _____ 13) A net force of 125 N is applied to a certain object. As a result, the object accelerates with an acceleration of 24.0 m/s^2 . The mass of the object is
- A) 3000 kg.
 - B) 2880 kg.
 - C) 144 kg.
 - D) 0.200 kg.
 - E) 5.21 kg.
- _____ 14) A 450-kg sports car accelerates from rest to 100 km/h in 4.80 s. What magnitude force does a 68.0 kg passenger experience during the acceleration?
- A) 394 N
 - B) 82.0 N
 - C) 342 N
 - D) 311 N
- 15) A 590-kg rocket is at rest on the launch pad. What upward thrust force is needed to accelerate the rocket uniformly to an upward speed of 28 m/s in 3.3 s?

Ch5MidYrReview
Answer Section

- | | | |
|-------------------------------------|-------------|--------------|
| 1) ANS: B | PTS: 1 | REF: Var: 1 |
| 2) ANS: B | PTS: 1 | REF: Var: 1 |
| 3) ANS: C | PTS: 1 | REF: Var: 1 |
| 4) ANS: F | PTS: 1 | REF: Var: 1 |
| 5) ANS: D | PTS: 1 | REF: Var: 1 |
| 6) ANS: A | PTS: 1 | REF: Var: 1 |
| 7) ANS: E | PTS: 1 | REF: Var: 1 |
| 8) ANS: D | PTS: 1 | REF: Var: 1 |
| 9) ANS: B | PTS: 1 | REF: Var: 1 |
| 10) ANS: B | PTS: 1 | REF: Var: 1 |
| 11) ANS: C | PTS: 1 | REF: Var: 1 |
| 12) ANS: C | PTS: 1 | REF: Var: 1 |
| 13) ANS: E | PTS: 1 | REF: Var: 1 |
| 14) ANS: A | PTS: 1 | REF: Var: 50 |
| 15) ANS:
1.1 × 10 ⁴ N | | |
| PTS: 1 | REF: Var: 1 | |