An elevator is being lifted up an elevator shaft at a constant speed by a steel cable as shown in the figure below. All frictional effects are negligible. In this situation, forces on the elevator are such that:

a) the upward force by the cable is greater than the downward force of gravity.
b) the upward force by the cable is equal to the downward force of gravity.
c) the upward force by the cable is smaller than the downward force of gravity.
d) the upward force by the cable is greater than the sum of the downward force of gravity and a downward force due to the air.
e) none of the above. (The elevator goes up because the cable is being shortened, not because an upward force is exerted on the elevator by the cable.)
You are a passenger in a car and not wearing your seat belt. Without increasing or decreasing its speed, the car makes a sharp left turn, and you find yourself colliding with the right-hand door. Which is the correct analysis of the situation?

a) Before and after the collision, there is a rightward force pushing you into the door.

b) Starting at the time of collision, the door exerts a leftward force on you.

c) both of the above

d) neither of the above
Two kissing adolescents have their braces lock. In order to become unstuck they wish to push against each other with the greatest force possible. Should they:

a) Have the stronger boy push against the weaker girl’s shoulders?

b) Have the weaker girl push against the stronger boy’s shoulders?

c) Increase the force by pushing against each other’s hands?
A large truck breaks down out on the road and receives a push back into town by a small compact car as shown in the figure below.

15. While the car, still pushing the truck, is speeding up to get up to cruising speed:
   (A) the amount of force with which the car pushes on the truck is equal to that with which the truck pushes back on the car.
   (B) the amount of force with which the car pushes on the truck is smaller than that with which the truck pushes back on the car.
   (C) the amount of force with which the car pushes on the truck is greater than that with which the truck pushes back on the car.
   (D) the car's engine is running so the car pushes against the truck, but the truck's engine is not running so the truck cannot push back against the car. The truck is pushed forward simply because it is in the way of the car.
   (E) neither the car nor the truck exert any force on the other. The truck is pushed forward simply because it is in the way of the car.