Short Answer Questions

1) Is a zero or a non-zero force required for a car to maintain a constant velocity? Explain.

2) Is a zero or a non-zero force required for a car to maintain a constant acceleration? Explain.

3) A student observes a kid pushing on a wagon causing it to speed up. In an attempt to understand the motion of the wagon, the student 1st recalls that at the point of contact between the kids hand and the wagon, Newton's 3rd Law says that the action and reaction forces are equal in magnitude but opposite in direction. However, when applying Newton's 2nd Law (F = ma) to the wagon, they mistakenly add both forces together and get zero, which means the acceleration would be zero. This makes no sense to them since that result would indicate that the wagon would NOT move, but they can clearly see the wagon being pushed along. What have they misunderstood about the 3rd law during their application of the 2nd law?

4) Can the effects of gravity act in the vacuum of space? Explain.

5) Is it possible for your weight to change as your mass remains constant? Explain.