In Motion Review #2

(Newton's Laws of Motion, Stopping and Braking Distance)

Part A – Multiple Choice

- 1. Which one of the following statements is true of an object that is at rest?
 - (A) There are no forces acting upon the object.
 - (B) There is no gravity acting upon the object.
 - (C) The individual forces acting upon the object are balanced.
 - (D) The individual forces acting upon the object are **NOT** balanced.
- 2. An object is moving to the left with a constant speed. What can be concluded about the forces acting upon the object?
 - (A) There is a leftward force but no rightward force.
 - (B) There are only vertical forces acting upon the object.
 - (C) There is a stronger leftward force than the rightward force.
 - (D) All the individual forces acting upon the object are balanced.
- 3. A net force acts upon an object. What can be known for certain to be true of the object?
 - (A) The object is stationary.
 - (B) The object is accelerating.
 - (C) The object is moving with a constant speed.
- 4. A 1000 kg car and a 5000 kg truck are both accelerating at the **same** rate. Which vehicle has the biggest force acting on it?
 - (A) The car.
 - (B) The truck.
 - (C) Neither. The force on both is the same.

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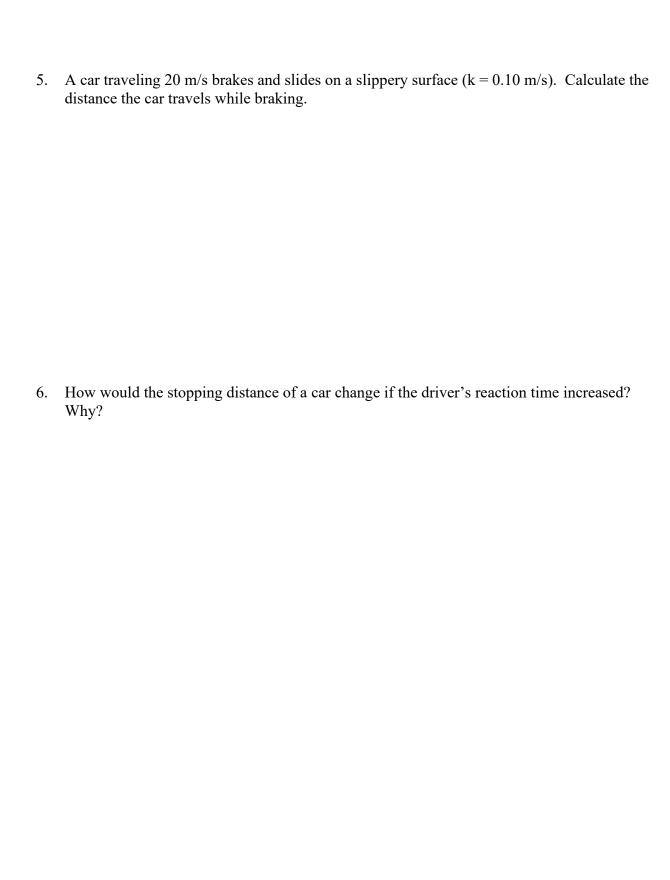
5.	The net force experienced by an object is decreased. The acceleration of the object
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	(A) is increased.
	(B) is decreased.
	(C) is not affected by this change.
6.	An object has an acceleration of 12.0 m/s ² . The net force acting on the object is doubled while the mass of the object is held constant. What will be the new acceleration?
	(A) 2.0 m/s^2
	(B) 6.0 m/s^2
	(C) 14.0 m/s^2
	(D) 24.0 m/s^2
7.	A large truck traveling at 50 km/h collides with a Monarch butterfly that is crossing the road. How do the forces acting upon these two objects compare to one another?
	(A) The truck experiences the greater force.
	(B) The butterfly experiences the greater force.
	(C) The butterfly and the truck experience the same amount of force.
8.	If you blow up a balloon, and then release it, the balloon will fly away. This is an illustration of
	(A) Newton's first law.
	(B) Newton's second law.
	(C) Newton's third law.
9.	Which of the following will affect the total stopping distance of a car?
	(A) road conditions
	(B) reaction time
	(C) speed of the car
	(D) all of the above

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Part B – Free Response Questions

1.	Your shopping cart has a mass of 65 kilograms. To accelerate the shopping cart down an aisle at 0.3 m/s^2 , what force would you need to use or apply to the cart?
2.	A small child has a wagon with a mass of 10 kilograms. The child pulls on the wagon with a force of 2 N. What is the acceleration of the wagon?
3.	Which of Newton's laws best explains why motorists should buckle-up?
4.	A box is placed in the back of a truck. The box is not tied down. When the truck accelerates forward, the box moves towards the back of the truck. Explain why this happens referring to Newton's laws of motion.

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