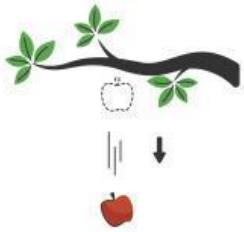
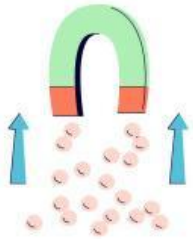
Physics (Force and Motion)

Part 1: State **true** or **false** in the bracket for each statement.

1. An object at rest will stay at rest unless acted on by an external force. (_____)
2. Friction always acts in the direction of motion. (_____)
3. The more mass an object has, the more force is needed to accelerate it. (_____)
4. Gravity only affects objects that are falling. (_____)
5. An object moving in a circle at a constant speed is not accelerating. (_____)
6. Air resistance is a type of friction. (_____)
7. A force can cause an object to start moving, stop moving, or change direction. (_____)
8. The unit of force in the International System of Units (SI) is the newton. (_____)
9. The greater the force applied to an object, the greater its acceleration will be. (_____)
10. In a vacuum, where there is no air, all objects fall at the same rate regardless of their mass. (_____)

Part 2: Name the type of force and state the definition for each pictures.

Example of Force	Name of Force	Definition
		
		
		
		
		
		
		

Part 3: Calculation.

- If a car accelerates from 0 to 60 m/s in 10 seconds, what is its acceleration?

- A force of 50 N is applied to push a box weighing 10 kg. What is the acceleration of the box?

- A ball rolls down a hill with an acceleration of 2 m/s^2. If it started from rest, how fast will it be moving after 5 seconds?

- A car moving at a speed of 20 m/s comes to a stop in 4 seconds. What is its acceleration?

- A 15 kg object is subjected to a 60 N force. What is the object's acceleration?

- If a bicycle accelerates at a rate of 3 m/s^2 and reaches a velocity of 18 m/s, how much time did it take to reach this velocity?

- A car travels 120 meters in 10 seconds. What is its average speed?

- If a force of 100 N is applied to an object and it moves 5 meters, what is the work done?

- A 20 kg object is lifted to a height of 5 meters. What is the gravitational potential energy? (Use g = 9.8 m/s^2)

- A runner accelerates from 2 m/s to 8 m/s in 3 seconds. What is the runner's acceleration?

- A 10 kg object experiences an acceleration of 5 m/s^2. What is the net force acting on the object?

- A car moving at 30 m/s decelerates to a stop in 6 seconds. What is its deceleration?

- If an object travels with a constant speed of 15 m/s for 10 seconds, what distance does it cover?