Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hr \_\_\_\_\_\_

**Newton’s First Law-Notes and Practice**

**FORCE AND FRICTION**

For our discussion:

FORCE is a \_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a type of \_\_\_\_\_\_\_\_\_\_\_ that acts on each of two objects when one object moves or there is an attempt to move one relative to another.

Examples: Sandpaper samples; tablecloth under dishes

**Is understanding \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ important?**

**I REST MY CASE!**

Toronto Raptors vs Milwaukee Bucks on the new Bradley Center floor. Oct. 25, 2013

**1st Law of Motion (Law of Inertia)**

***An object at rest will stay \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_, and an object \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ will stay in motion at \_\_\_\_\_\_\_\_\_\_\_\_\_ velocity, unless acted upon by an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force.***

**INERTIA**

* ***Inertia is the tendency of an object to \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ in its \_\_\_\_\_\_\_\_\_\_\_: whether in motion or motionless.***
* **Unless acted upon by an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_, this golf ball would sit on the tee forever.**
* **Once airborne, unless acted on by an unbalanced force (\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_), it would never stop!**

**If the object is moving….INERTIA makes the moving object continue to move at a \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the same direction unless some \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ changes the object’s motion**

**Inertia is \_\_\_\_\_\_\_\_\_ physical quantity and it \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ have units**

**The property of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is found from Newton’s \_\_\_\_\_\_\_\_ Law of Motion.**

**RELATIONSHIP BETWEEN INERTIA AND MASS**

**MASS**

* Is constant wherever it is measured; \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ depend on gravity
* Base quantity
* \_\_\_\_\_\_\_\_\_\_\_\_\_ quantity
* The SI \_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (kg)

If the motorcycle were to abruptly stop, then the rider in motion would \_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_. The rider would likely be propelled from the motorcycle and be hurled into the air. Once he leaves the motorcycle, the rider becomes a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and continues in projectile-like motion. It is because of \_\_\_\_\_\_\_\_\_\_\_\_.

**Applications of inertia**

**Some examples of using inertia in our daily life:**

To tighten the loose head of a hammer, knock the end of the handle held vertically, on a hard surface. The hammer head will continue on its downward motion. When the handle has been stopped, the top end of the handle is deeper into the hammer head.

**The wet fur of cats and dogs:**

Cats and dogs dry their wet fur by shaking their body vigorously.

Water droplets on the fur tend to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_ when the body has stopped shaking.

Water droplets will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the fur and fall away

**To dislodge sticking ketchup:**

Ketchup in a bottle is poured out by a quick downward movement of the bottle followed by a sudden stop.

The ketchup moves with the bottle during the downward movement.

When bottle stops, the \_\_\_\_\_\_\_\_\_\_\_\_ of the ketchup causes it to continue its downward movement and it is forced out of the bottle.

**Passengers in a bus**

Passengers in a bus will \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when a stopped bus starts to move with forward \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The passengers were originally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When the bus starts to move forward with an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the passengers’ \_\_\_\_\_\_\_\_\_\_\_ makes them maintain their original position.

**When a student is riding a bicycle and runs over a stone, he is thrown forward. Why does this happen?**

THE \_\_\_\_\_\_\_\_\_\_\_\_\_\_ OF THE STUDENT MAINTAINS HIS FORWARD \_\_\_\_\_\_\_\_\_\_\_\_\_ SO THAT HE IS THROWN FORWARD WHEN HIS BICYCLE IS MOMENTARILY \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ BY THE STONE

**PRACTICE:**