Name:_____

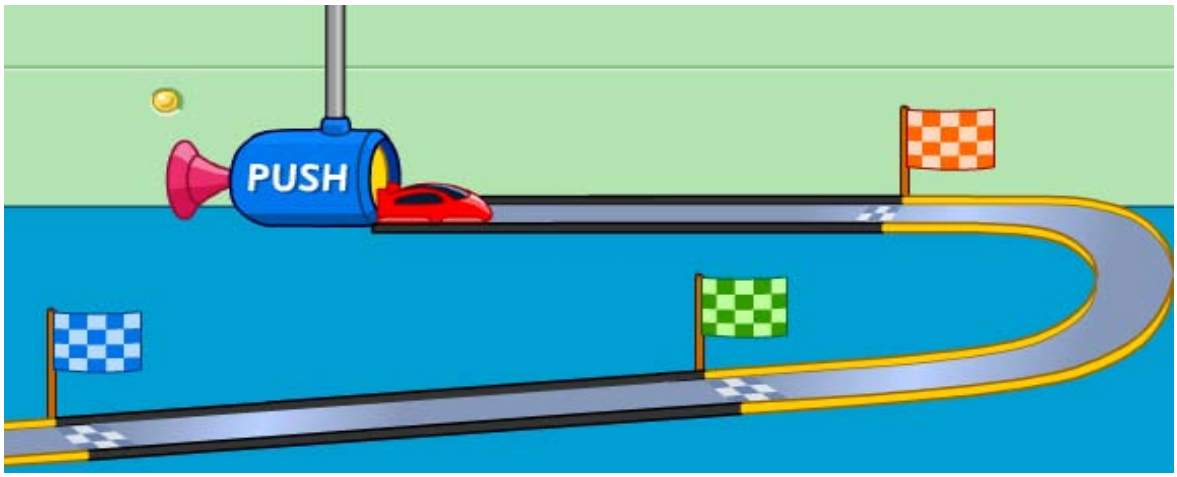
Class:_____

Date:_____

Friction

Physics Gr10

Pre Reading Activity



1. 2On which of the following surfaces do you think that the car can easily reach the finishing blue flag line?

   - Vinyl
   - Marble
   - Carpet
   - Wood

Why? _____

2. What is the relation between the different surfaces and the speed of the car?

   - Magnetic Force
   - Electrical force
   - Frictional force
   - Gravitational force

3. If the surface between the orange and green flag was made of a thick carpet – what would happen to the speed of the car?

_____

READING TEXT -4 Types of Friction

Friction is a force that opposes motion between two surfaces that are touching.

Friction occurs when two surfaces come into contact with each other. The rougher the surface is, the greater the friction. The smoother the surface is, the less friction.

Friction depends on the amount of force pushing surfaces together and how rough the surfaces are. The greater the force pushing surfaces together, the more friction is produced.

When force increases, the amount of friction increases. When force decreases, the amount of friction decreases.

Friction causes heat

There are 4 types of friction. They are **sliding friction**, **rolling friction**, **fluid friction**, and **static friction**.

Sliding Friction is when something slides across a surface. Sliding friction requires **large amounts of force**.
Examples of sliding friction are:

- using brakes in a car or bike,
- sledding,
- writing with chalk on the blackboard.
- moving a furniture by pushing it across the floor

Rolling Friction occurs between wheels and a surface. The force of rolling friction is **less than the force** of sliding friction. The friction between wheels and the floor is rolling friction.

Examples of rolling friction are:
*riding a bike,
*driving in a car or bus,
*roller-skating/skateboarding
*moving furniture by putting it on wheels and pushing it across the floor

Fluid Friction involves liquids and gases. Fluid friction **can increase or decrease friction**, depending on the surfaces involved.

Walking on a wet floor decreases friction. The friction between your feet and the wet floor is less than the friction between your feet and a dry floor.

Running in a pool increases friction. It takes more force to run in water than it does to run on concrete.

Static Friction is when a force is applied to an object, but the **object does NOT move**. The object doesn't move because the force of static friction balances the force applied to the object. Once the force being applied to the object is greater than the force of static friction, the object will move and another type of friction will occur. The rock in the picture below is not falling down even though it is at an angle. Friction is playing a part to stop it from rolling.

Friction can be helpful, but it can also be harmful. There are several ways to reduce friction. Some of these include:

- Using a lubricant (i.e. wax, grease, motor oil)
- Switch from sliding friction to rolling friction (add wheels)
- Make surfaces smoother (i.e. sanding wood on a bench)

There are several ways to increase friction. Some of these include:

- Increase the force pushing the surfaces together (i.e. pressing down harder when scrubbing dishes)
- Switch from rolling friction to sliding friction (remove wheels)
- Make surfaces rougher (i.e. wearing batting gloves or cleats

Post Reading Activities
ACTIVITY-1

COMPLETE THE FOLLOWING SENTENCES:

1. Friction is an

_____

2. Friction occurs when

_____
_____

3. The rougher the surface the _____ the friction. (greater or lesser) The _____ the surface the lesser the friction produced. (rougher or smoother)

4. Which would be easier to slide across a table, our science textbook or our social studies economics workbook? Why?

_____
_____
_____
_____
_____

5. Friction causes _____.

6. The four types of friction are _____,

_____, _____, and

_____.

7a. Sliding friction is when something _____ across a surface.

7b. 2 examples of sliding friction are:

8a. Rolling friction occurs between _____ and a surface.

8b. 2 examples of rolling friction are: _____, _____

9. Which type of friction needs **more force**, sliding friction or rolling friction?

_____
_____

10a. Fluid friction involves _____ and _____.

10b. One example of fluid friction is:

11. When a force is applied to an object, but does not cause the

object to move _____ friction occurs. (fluid or static)

ACTIVITY-2

ANSWER THE FOLLOWING QUESTIONS FROM THE PASSAGE:

1. List 3 ways to reduce friction.
   1.
   2.
   3.
2. List 3 ways to increase friction.
   1.
   2.
   3.

ACTIVITY-3

Matching!

_____1. Waves rocking against a boat in the ocean **A.** Sliding Friction

_____2. A plane driving down a runway to begin take-off **B**. Rolling friction

_____3. Science textbook on your desk **C**. Fluid Friction

_____4. Rearranging our classroom by pushing the desks together. **D**. Static friction