

Name: _____

Rubbed the Wrong Way

Types of Friction

There are 3 basic types of friction in our everyday lives: **Dry, Fluid, and Rolling Friction.** Label the following images based on the type of friction shown:



a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

Did You Know?

Besides affecting motion, did you know that friction can also charge objects? Friction is a very common cause of **static electricity**, which occurs when either positive or negative charges collect on an object's surface. Different materials attract electrons more than others, so by rubbing certain materials together one object builds up a negative charge while the other builds up a positive charge. Do you think that the balloon in the picture has a positive or negative charge? How about the girl's hair?



Static & Moving Friction

Materials:

- Several Rubber Bands
- Pencil
- Shoe Box
- Objects to pull



Instructions:

1. Loop all of the elastics together so you have something about as long as your arm.
3. Decorate your box! When you're done, place some weighted objects in the box and find a smooth floor.

2. Punch a hole in the shoebox and thread the elastic through the hole, securing it with a pencil.
4. Hold the end of your elastic chain and stretch it out until the box begins to move.

Name: _____

Talk About It!

1. When were the elastics stretched out the longest?
2. What does this mean in terms of the amount of force needed to get something going versus keeping it going?

Da Vinci's Corner

Leonardo da Vinci (1452-1519) was the first person to discover and document the rules of sliding (kinetic) friction. Aside from this work in physics, he was a painter, sculptor, architect, mathematician, inventor, anatomist, engineer, musician, botanist, and writer. That's quite a list! He was reported as a man who had an "unquenchable curiosity".



Friction Factors

There are three main factors that will influence the total amount of friction:

1. **The roughness of the surfaces**
2. **The weight of the object**
3. **The surface area**

Do these factors increase or decrease friction?

Write down one example of how each of these factors affect friction:



True or False?

1. _____ Although wheels are useful for rolling and reducing friction, they couldn't work without friction.
2. _____ It would be easier to stand without friction.
3. _____ Friction is able to generate static electricity.
4. _____ The harder two objects are pressed together, the more force it takes to overcome the friction and get them to slide.
5. _____ Fluid friction is used a lot in water parks to help people slide smoothly and safely down slides.

