

Sticky Shoes Lab!

Name _____ Period _____

Problem: Friction is a force that acts in the opposite direction to motion. How does the amount of friction between the bottom of a shoe and a surface compare for different types of shoes.

Materials: spring scale, mass set, large paper clips, tape, balance

Procedure: Shoes are designed to deal with various friction forces, including these: starting friction, forward stopping friction, sideways -stopping friction. Place your shoe on the balance. Then put masses in each shoe so that the total mass of the shoe plus the masses is 500g.

- Starting friction, attach the paper clip to the back of the shoe
- Forward-stopping friction, attach the paper clip to the front of the shoe
- Sideways-stopping friction, attach the paper clip to the side of the shoe

To measure starting friction, pull the shoe backward until it start to move. The force necessary to make the shoe start moving is equal to the friction force. Record starting friction force in your data table. To measure either type of stopping friction, use the spring scale to pull each shoe at a slow, constant speed. Record the stopping friction force in your data table.

SHOE	SHOE MASS g	Starting-Friction (N)	Sideways-Stopping Friction (N)	Forward-Stopping Friction (N)
A.				
B.				
C.				
D.				

Essential questions:

1. Which shoe had the most starting friction? Which had the most forward-stopping friction? Which had the most side-ways stopping friction?
2. Do you think that using a shoe with a small amount of mass in it is a fair test of the friction of the shoes? Why or why not? (Consider that shoes are used with people's feet inside them.)
3. Can you identify a relationship between the type of shoe and the amount of friction you observed? Compare back to your table tables shoes! What did you observe that might cause one shoe to grip the floor better and the other shoes?

Graph your results below!

SHOE	SHOE MASS g	Starting Friction (N)	Sideways Stopping Friction (N)	Forward Stopping Friction (N)
A				
B				
C				
D				