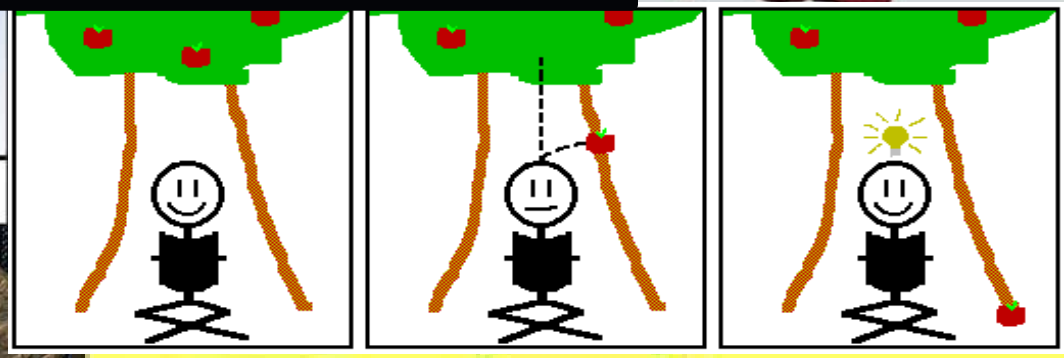
Newton's 1st Law

A few seconds before Isaac Newton's distant cousin ended up in a hospital with a concussion.



Sir Isaac Newton

Born: January 4, 1642 in England

Died: March 31, 1727 in England

1643-1727

physicist

calculus

Who is Newton?

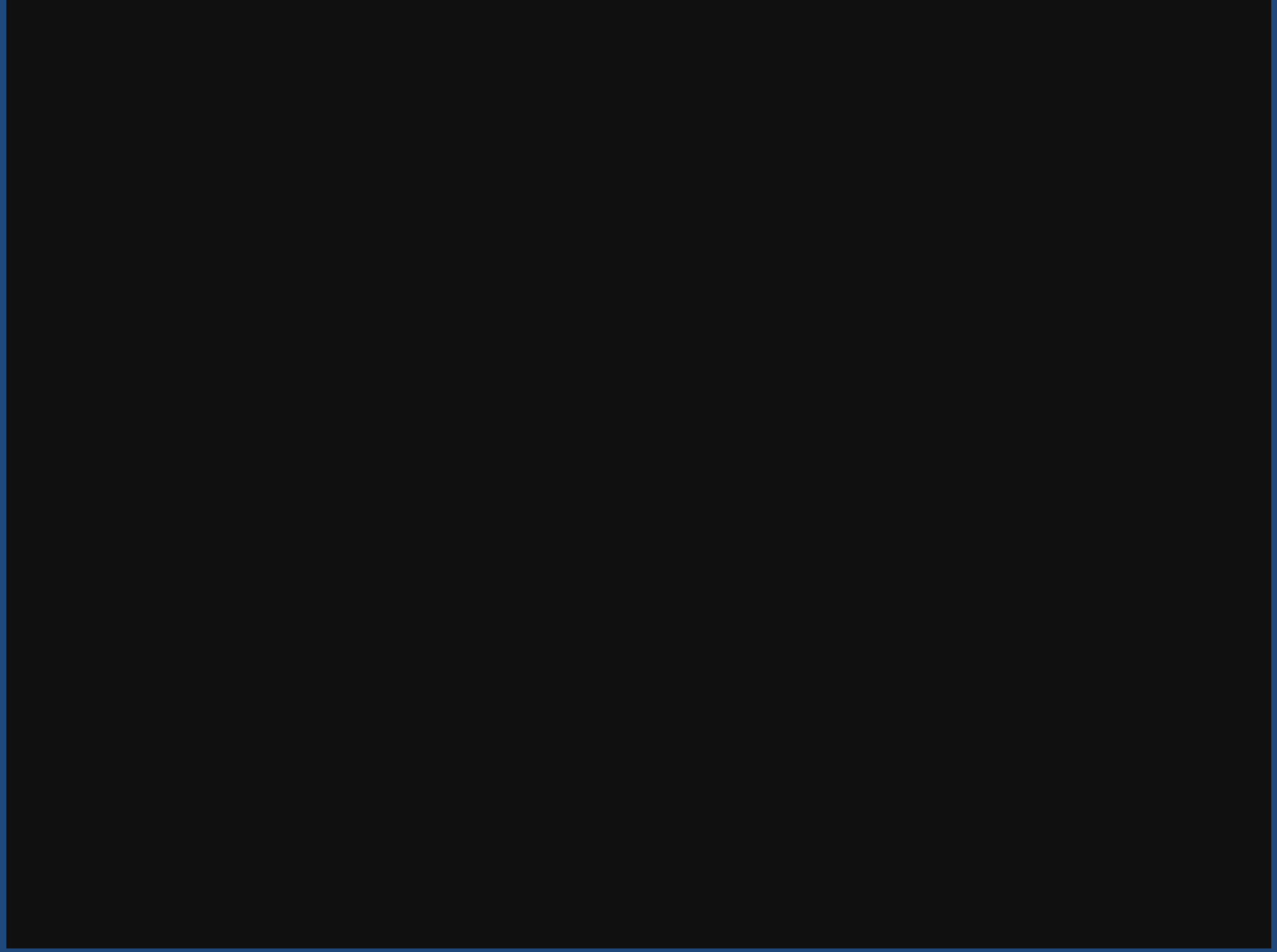
Laws of Motion

astronomer

What is physics?

mathematician

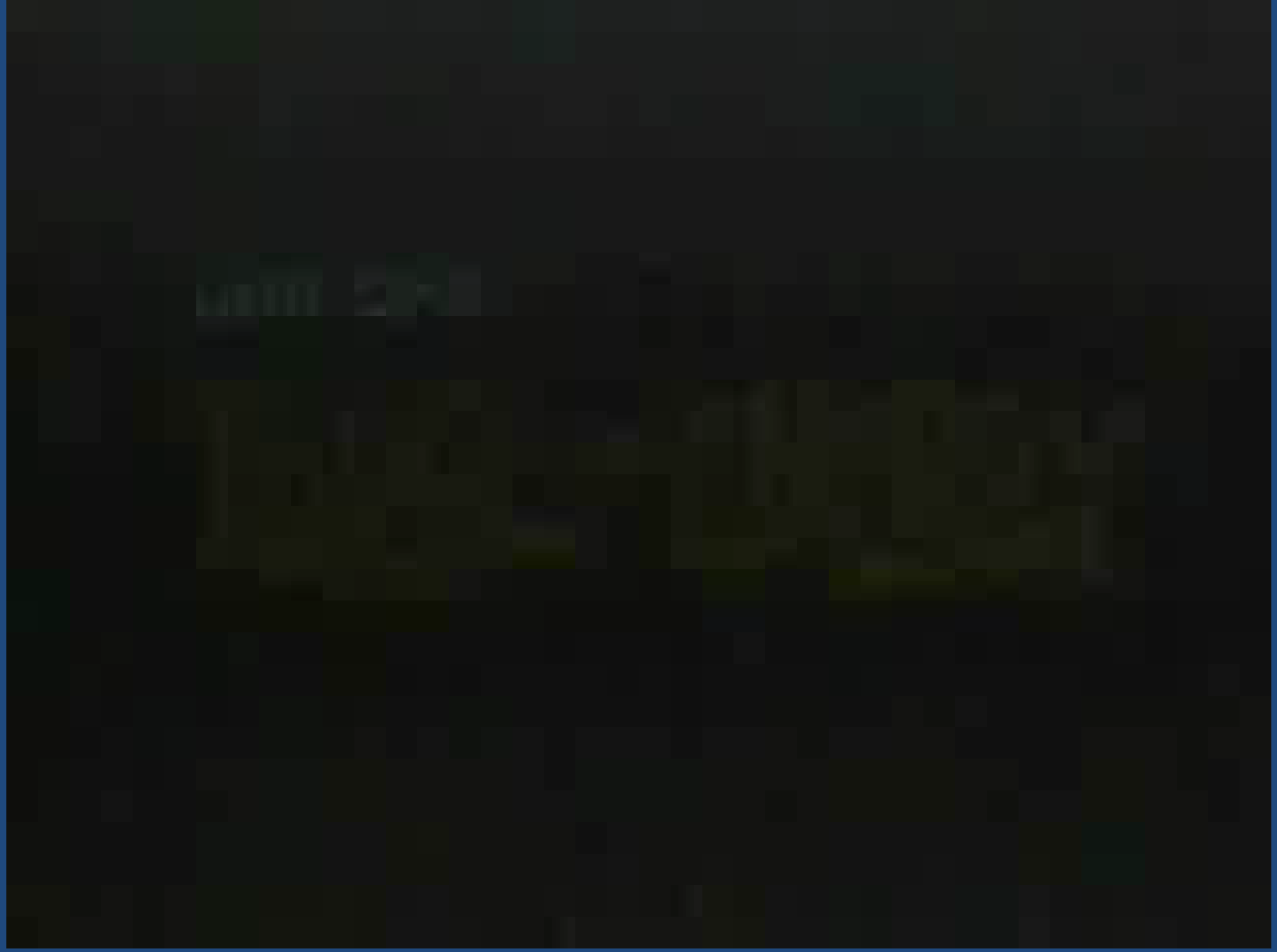
Law of Universal Gravitation



In this unit, we will be focusing on Newton's Laws of Motion.

Newton's **1st Law of Motion** is all about **INERTIA**

What's **Inertia**, you ask?
Let's find out!



1-Inertia-Eureka edited

So...

Inertia is the tendency
of an object to keep doing
whatever it's already doing.

Let's see if you've got it...

1. If an object is moving, it wants to...

A. keep moving

B. stop moving

C. change direction

2. If an object is sitting still, it wants to...

A. start moving

B. keep sitting still

C. jump up

3. If an object is going in a straight line, it wants to...

A. continue in a straight line

B. change direction

C. increase speed

So...

objects want to keep doing what they are already doing...

that's INERTIA!

Can anything affect Inertia?
Let's find out...

Newton's 1st Law of Motion

- **Inertia**= object's resistance to changing its motion.
- Things like to keep doing what they are already doing.
- "An object in motion will remain in motion, and an object at rest will remain at rest unless acted on by another force."

2 mass-Eureka

Let's see if you've got it...

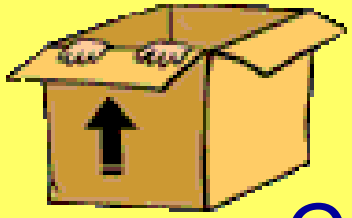
Big mass means big Inertia

Small mass means small Inertia

and that means...

it takes **more force** to start, stop, or change direction of a **big mass**.

4. What has the MOST inertia?



A.empty box

B.box filled with sand

C. box filled with styrofoam peanuts

5. What takes the MOST force to stop?

A. bicycle

B. family car

C. cruise ship

6. Put in order from LEAST to MOST inertia.

A. 10 grams of steel

B. 20 grams of sand

C. 30 grams of water

Inertia

- Depends on MASS- how much “stuff” is in an object.
- Big Mass= Lots of Inertia (REALLY wants to keep doing what it’s doing, difficult to change)
- Small Mass= little inertia (easier to change what it’s doing)

Item	Describe or Draw what you saw.	What things have inertia? Is the inertia big (B) or little (L)?	What forces overcame (changed) the inertia?
Coin in Cup			
Car Crash			
Eggs in Motion			
Ice Hockey			
Car on Curve			
Bus Ride			

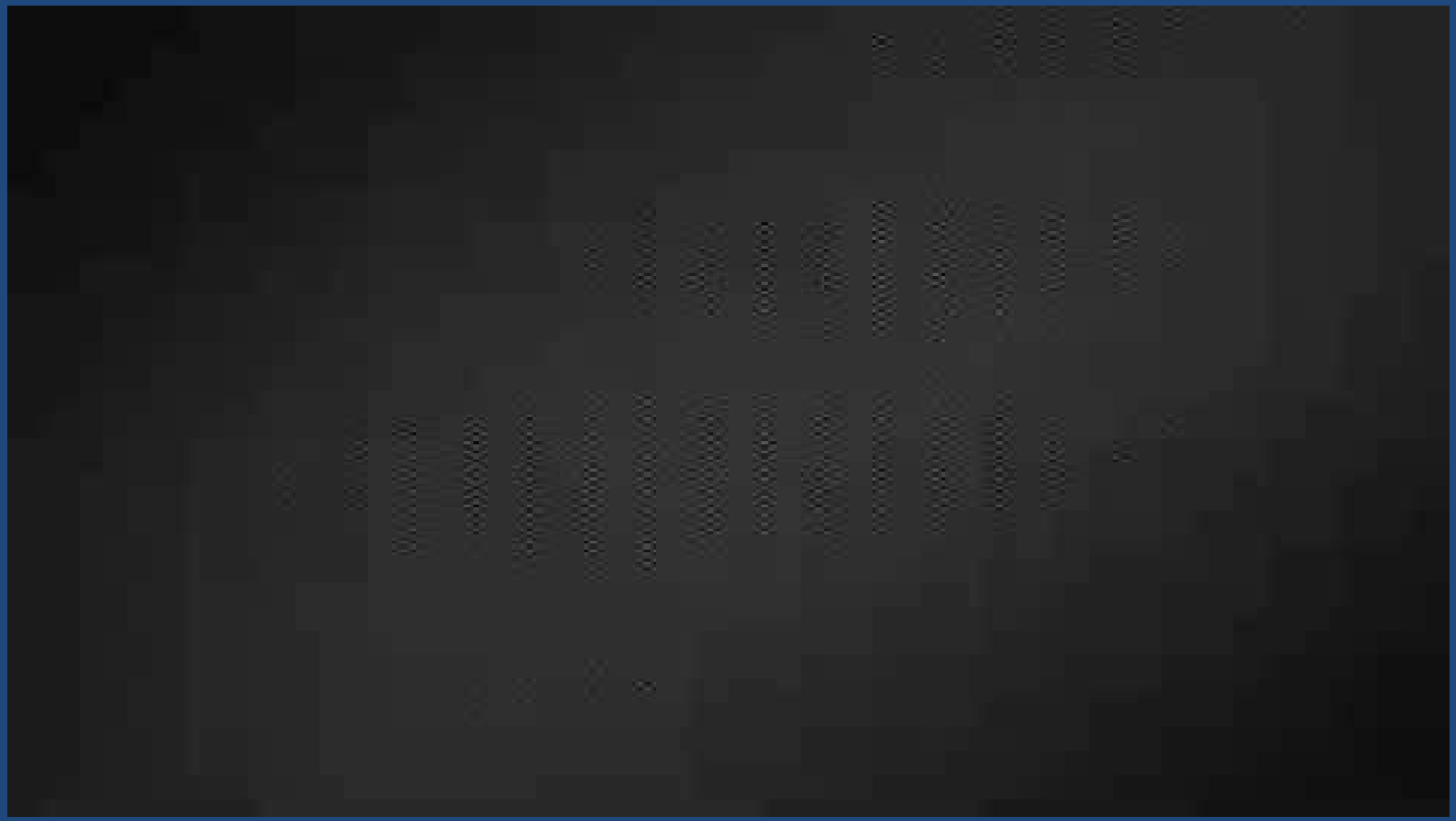
Now, it's time to look at some "real world" examples of Newton's 1st Law of Motion.

For each item listed in the first column, you need to briefly:

- describe what you saw
- identify what things have big (B) and little (L) inertia
- identify pushes/pulls (forces)

Coin in Cup

Car Crash



Eggs in Motion

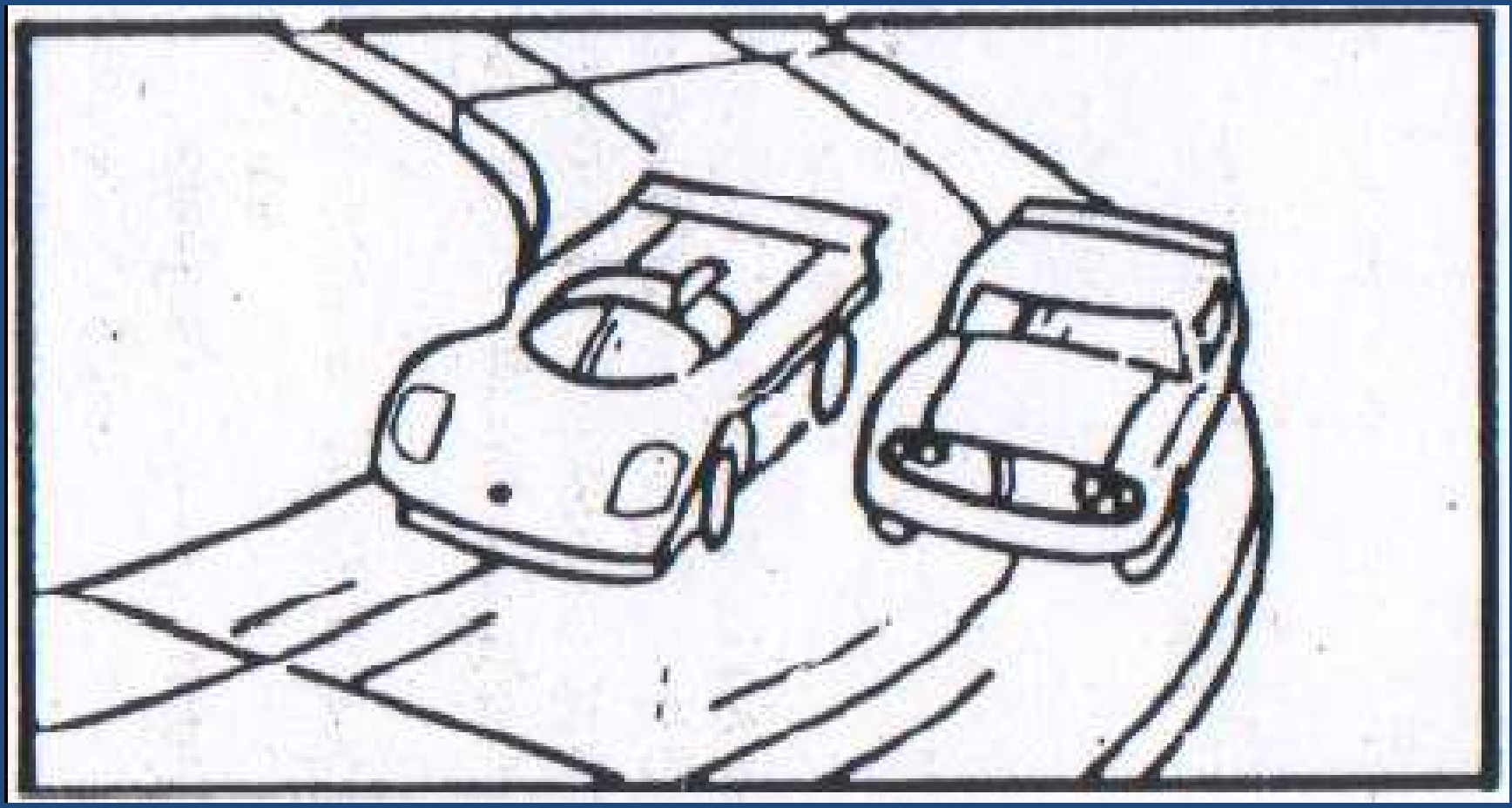
CSI Bus Crash

CSI Bus 1st

Ice Hockey

1st law Ice Hockey (no sound)

Car on a Curve



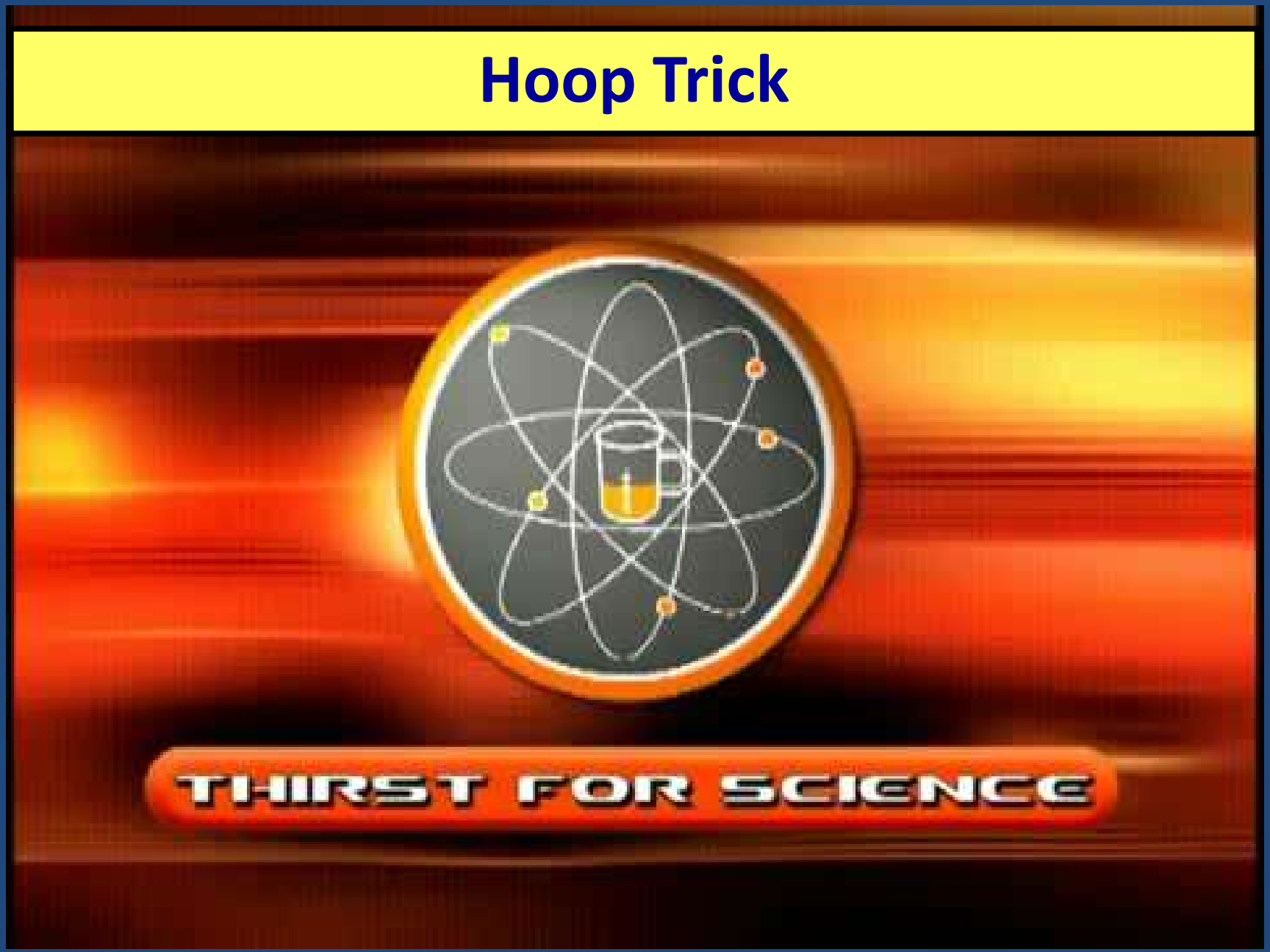
Bus Ride

Now it's your turn to experience Newton's 1st Law

Follow your teachers directions to complete the mini-labs on the back of your worksheet.

Extras...
more videos showing
Newton's 1st Law

Hoop Trick



Hoop Demo