



Save a Friend Save Yourself Video transcript

LESSON 1 – NEWTON’S FIRST LAW OF MOTION

Did you know that every day more than one person your age is killed in motor vehicle accident? That’s more than 400 children each year. And, more than three times that number are injured.

These are really terrible facts. But they are facts you can help change. Until you’re 13 years old, the safest place to sit is in the back seat of the car. And no matter where you sit, you should always wear a seatbelt.

The skull and crossbones WARN OF DANGER.
The koi fish REPRESENTS COURAGE.
The tiger means TRIUMPH OVER DARK FORCES.
This logo was designed by students like you to drive the point home –
Save yourself, save a friend -buckle up in the back seat.

Seatbelts save lives, and to understand why, we need to understand some basics about the laws of motion. Here’s a NEW WORD– I-N-E-R-T-I-A. INERTIA.

Once you understand inertia, you can understand Isaac Newton’s First Law of Motion, which brings us back around to — seatbelts.

Why did this dummy get left behind? It’s called inertia. The property of matter that causes it to resist any change in its state of motion. Galileo introduced the concept in the late 1500s, And almost 100 years later Newton used this idea to formulate his First Law of Motion. The law of inertia.

It’s why the dummy fell off the back of the truck. It was at rest, and it wanted to remain at rest. That’s inertia.

I’m moving at 35 miles per hour but from one perspective it might not look like I’m moving at all. Because in relationship to the passenger compartment, my position isn’t changing.

But if you look at me from the outside you can see that I’m moving at the same speed as the vehicle. In this case at about 35 miles per hour. And if Newton was right, and we know he was, I’m going to keep on moving at this same speed until an external force acts on me.

Now what does this mean to occupants of a moving vehicle? Watch this.

See how the car and the crash test dummy are traveling at the same speed?
Now watch what happens when the car crashes into the barrier.

The front end of the car is crushing and absorbing energy, which slows down the rest of the car. But the dummy inside keeps on moving at its original speed until it strikes the steering wheel and windshield.

This is because the dummy is a body in motion traveling at 35 miles per hour. And remains traveling 35 miles per hour in the same direction until acted upon by an outside force.

In this case it's the impact of the steering wheel and windshield that applies the force that overcomes the dummy's inertia.

Let's review. An object at rest stays at rest until acted upon by an external force. Likewise, an object in motion stays in motion until some external force stops it. These two ideas together are the basis of Isaac Newton's First Law of Motion.

If you were in a car crash and not wearing a seatbelt, do you think you could hold yourself in place? There's a way to roughly estimate the FORCE, or crash force, when you hit that wall.

Multiply the speed you're traveling times your body weight.

Can anyone watching this hold three thousand five hundred pounds? So, if you're in a vehicle, what's going to stop you.?

Think about it, then go ahead and shout it out – (pause)
Do I hear dashboard? "Dashboard "Maybe the windshield? "windshield
How about this? A Seatbelt is the best answer.
Seatbelts help slow the body down, prevent the body from slamming in to hard objects, and prevent the body from being thrown out from vehicle.

They also spread the crash force over the large bones of the body. More about that later. First, take a look at this.

This driver lost control of his truck and crashed in to something in front of him. As you can see –he wasn't wearing a seatbelt. He was thrown into the back seat and suffered serious injuries.

Seatbelts are designed to help you defy Newton's First Law of Motion. Well, not defy but modify. Actually, seatbelts help you survive the laws of motion.

There's something else that helps modify the First Law of Motion. Let's watch this again. The front part of the car is crushed, right? That's called the "crumple zone". It receives the biggest impact and sustains the most damage.

By sitting in the back seat, you increase the "crumple zone" by 4 feet. And when you think about it, being as far away as possible from the point of impact is definitely a good thing.

LESSON 2 – LIFE SCIENCES – AIRBAGS

Now that you have some information about your skeleton —
And the organs your skeleton protects...

It's easy to see why wearing a seatbelt, —and sitting in the back seat – protects your body from serious injury.

Here's the right way to wear a seatbelt. Buckle it low over your lap where your hip bones are, then place the shoulder strap across your chest. Don't put the belt over your stomach. Or place the shoulder strap behind you.

Here's a question. If your seatbelt isn't properly placed and buckled, what parts of your body could be damaged? What internal organs could be injured?

Go ahead – shout it out.

Head.

Neck.

Stomach?

Here's a model that shows two six year old bodies traveling at only 10 miles per hour. The top one is properly belted in a car seat, and of course, you're too big for that now. But the bottom one shows a body that is wearing a seatbelt the **wrong way**. The belt is fastened too high, and the shoulder strap is behind the back. When the seatbelt is buckled correctly, it works **with your skeleton** to protect your body's organs.

Most vehicles today have airbags too. Airbags are designed to cushion the body and protect it from slamming into the hard surfaces in a car – like the dashboard and the wind shield. Airbags inflate at a rate of up to 175 miles per second.

That's not miles **per hour**. – like a car going 35 miles per hour. Airbags inflate in miles per **second**. That's the blink of an eye. Think of it this way. If you're in Denver and your friend is skiing in the mountains, it would take less than a second to meet up. Or, if you wanted to go to Mexico City, or New York City – and you traveled at the speed of an inflating airbag, you'd be there in about 10 seconds.

So if you're that body in the front seat without a seatbelt, and you're in a crash, will you have the TIME or the STRENGTH to protect yourself from that airbag? Correct answer NO
Here's an example of what could happen to your body. This model shows a car going 20 miles per hour. Neither of the children is wearing a seatbelt.

You can see that when the car begins to slow down, the child in the front seat has moved right on top of the air bag. Think to yourself what parts of the body could be injured when the air bag inflates. If you're thinking head, brain and spinal chord, you're right. And without a seat belt on, the child in this demonstration might be thrown out of the car, or on to the dashboard

Now that you've seen these examples of how seatbelts can protect the human body, you can see that it makes sense to buckle up in the back seat.

LESSON 3 – MAKING CHOICES

Buckling up in the back seat is a “good habit”. We form other good habits in life – like making good food choices. And brushing our teeth after eating.

Wearing a seatbelt is right up at the top of the list of good habits. That's because seatbelts save lives. They protect our bodies from crash forces if the car collides with another car. Or, if the driver has to hit the breaks to avoid hitting something else in the road.

Many families even have a family RULE that everyone in the car must wear a seatbelt, and that children under thirteen must sit in the back seat.

In Colorado, there's even a law about wearing seatbelts, and strapping small children in car seats. These laws and rules and habits are based on facts and information about what keeps us safe.

As we get older, though, and ride in cars with other people, and aunts and uncles and brothers and sisters and friends — where we sit, and if we buckle our seatbelt, become CHOICES we need to make ourselves.

When we make a choice or a decision about something — we use facts and information and habits and family rules and laws and sometimes other influences to come to a decision. To make a choice. How do you make decisions?

If the skull and crossbones warn of danger
And the koi fish stands for courage
And the tiger represents triumph over dark forces
How can this logo help you make good choices?

(end)