

## Seat Belt Legislation and Inertia



### Activity Overview

In this activity students will learn about Newton's First Law of Motion. They will be given the task of applying their knowledge to create an ad campaign encouraging Albertans to wear seat belts. The lesson will look at how science can be used to influence our laws.

### Curriculum Connections

This activity was designed for Science 20 or Physics 20 in Alberta and has the following learning outcomes:

- To apply Newton's first law of motion
- To reflect on the role of science and technology in society
- To develop skills in science (nature of science) and information and communication technology (ICT)

### Time Required

Approximately 60 minutes

### Materials Required

- Projector and internet connection
- Student handouts
- Props for inertia demonstrations (toy cars, eggs, tape, string, etc)
- Video camera (optional)

## Lesson Format

- Pre-lesson Information
- Brainstorming
- Introduce Newton's First Law of Motion
- Activity
- Reflection and Discussions

## Pre-requisite Knowledge

- None

## For the Teacher

### Instructions

#### Pre-lesson

1. A few days before the lesson the teacher should inform students to bring in materials that could be used in a seat belt simulation. Some suggested materials include toy cars, eggs, and tape. The teacher may also provide materials during the lesson if available.

#### Anticipatory Set

2. Start the lesson with a discussion to determine what students already know. Ask questions such as:

- a. Why do we wear seat belts?
- b. Does everyone always wear their seat belts? Why or why not?
- c. What is the most common reason that seat belts are not worn?
- d. What happens if you are caught without a seat belt?

3. Play the "Seatbelt Legislation and Newton's First Law of Motion" video found at [http://www.youtube.com/watch?v=t8WEcA\\_VqHQ](http://www.youtube.com/watch?v=t8WEcA_VqHQ). Alternatively teachers can perform their own demonstrations of Newton's First Law of Motion.

#### Activity

4. Pass out the assignment and read through with students.

5. Place students in groups of 3-5 students and have them begin the task.

### Reflection

6. Reflect on the assignment and lesson by instructing students to discuss in their groups how science and the law can work together to better society.

7. Students can choose to upload their assignments to YouTube as a video response to the “Seat Belt Legislation and Newton’s First Law of Motion” video played at the beginning of the lesson.

### Guidance

Students may have trouble thinking of a method to simulate seat belts and driving. You could suggest they use a toy car that comes to a sudden stop.

### Assessment

Assessment criteria is found in the student handout materials.

### Extention Activity

This lesson can be continued by having students conduct online research into the laws governing school buses and seat belts. They could explain their findings from a physicist’s perspective.



Centre for Public Legal Education Alberta

800, 10050 -112 Street

Edmonton AB T5K 2J1

Web: [www.lawcentralschools.ca](http://www.lawcentralschools.ca)

Email: [info@cplea.ca](mailto:info@cplea.ca)

For the Students

Law for Beginners

<p style="text-align: center;"><b>ALBERTA REGULATION 122/2009</b> <b>Traffic Safety Act</b> <b>VEHICLE EQUIPMENT REGULATION</b></p>	<p style="text-align: center;">What it Means</p>
<p><b>Seat belts required</b></p> <p><b>82 (1)</b> A person shall not drive or operate a motor vehicle in which a child who weighs 18 kilograms or less is a passenger unless</p> <ul style="list-style-type: none"> <li>(a) the motor vehicle is equipped with a child restraint system,</li> <li>(b) the child restraint system is properly installed, and</li> <li>(c) the child is properly secured in the child restraint system.</li> </ul> <p><b>(2)</b> If a motor vehicle is being driven and it has a seat belt assembly</p> <ul style="list-style-type: none"> <li>(a) in the driver’s seat position, the driver shall wear the complete seat belt assembly, and</li> <li>(b) in the passenger seat position, the passenger shall wear the complete seat belt assembly.</li> </ul> <p><b>(3)</b> A person shall not drive or operate a motor vehicle that has a seat belt assembly in the passenger seat position unless the passenger in the seat is wearing the complete seat belt assembly if the passenger</p> <ul style="list-style-type: none"> <li>(a) is 6 years old or older but under the age of 16 years, or</li> <li>(b) is a child who weighs more than 18 kilograms.</li> </ul> <p><b>(4)</b> A person who is required to wear a seat belt assembly under subsection (2) or (3) shall wear the seat belt assembly properly adjusted and securely fastened.</p> <p><b>(5)</b> A person shall not, with respect to a seat belt assembly in a motor vehicle, remove it, render it partly or wholly inoperative or modify it so as to reduce its effectiveness if the motor vehicle was equipped with the seat belt assembly at the time it was manufactured as required by the <i>Motor Vehicle Safety Act</i> (Canada) and the regulations under that Act.</p> <p><b>(6)</b> A person shall not drive or operate a motor vehicle that was equipped with a seat belt assembly at the time it was manufactured as required by the <i>Motor Vehicle Safety Act</i> (Canada) and the regulations under that Act if the seat belt assembly has been removed, rendered partly or wholly inoperative or modified so as to reduce its effectiveness.</p>	<p>82</p> <p>(1) Children under 18 kgs must be secured in a properly installed child safety seat before driving (Either have all periods at ending or none).</p> <p>(2) Driver and passenger must wear their seat belt properly.</p> <p>(3) The driver must make sure children under 16 years old are wearing their seat belts properly.</p> <p>(4) Seat belts must be adjusted and worn correctly.</p> <p>(5) You cannot change the seat belt in your vehicle in a way that will make it less safe.</p> <p>(6) You cannot drive a vehicle if the seat belt has been changed and is less effective.</p>

Did you know that legislation is another word for the written law?

## Your Task

You have been hired by the province of Alberta to educate people about seatbelt laws. In recent years, Albertans wear their seat belts less than the national average. You will create a video presentation that:

1. Provides a brief explanation of Alberta law regarding seat belts.
2. Demonstrates Newton's First Law of motion
3. Relates the Driving Legislation to Newton's First Law of Motion

## How You Will Be Assessed

	4 Points Excellent	3 Points Proficient	2 Points Adequate	1 Point Limited *	Insufficient/ Blank *
Apply Newton's first law of motion to explain, qualitatively, an object's state of rest or motion	Provides a <b>comprehensive</b> explanation and produces an example that <b>clearly and accurately</b> demonstrates Newton's first law.	Provides a <b>thorough</b> explanation and produces an example that <b>sufficiently</b> demonstrates Newton's first law	Provides a <b>basic</b> explanation and produces an example with <b>minor misconceptions</b> that demonstrates Newton's first law	Provides a <b>superficial</b> explanation and produces an example with <b>misconceptions</b> that demonstrates Newton's first law	<b>Insufficient evidence of student performance</b>

## Upload Your Video (optional)

Post your video response and share your seat belt ad campaign online. View the LawCentral Schools seatbelt video on YouTube.

The image shows two examples of a social media post interface. The top example shows a text box with a red arrow pointing to it and the text "click in text box" below it. The bottom example shows the same text box with a red arrow pointing to a red-bordered box containing the text "or Create a video response" and the text "click and upload" below it. The interface includes "All Comments (0)" and "Reactions (0)" labels, a "Your reaction?" dropdown menu, a "Cancel or Post" button, and a "500 characters remaining" indicator.