

Name: _____

Inquiry Question

They say a picture can be worth a thousand words. What about an entire comic strip? Even better – how about a short, animated, stop-motion movie? Can you convey Newton’s Laws of motion pictorially or using Claymotion? Let’s get in touch with our artistic and creative side.

Paul Hewitt is a famous Physics Professor from the United States. In addition to his many textbooks, activities, and demonstrations (all can be found online), he is also famous for his simple physics sketches known as “Hewitt Drew-it”. He discovered that these simple drawings could be quite effective in explaining complicated physics.

Video game designers are often required to create a story board that illustrates the flow of their game. A solid understanding of physics is imperative to create a realistic virtual experience. Their story boards should reflect the reality of the physical universe.

After you complete your cartoon or movie have somebody view it. If they can’t describe the concept you were trying illustrate, then you missed the mark!



Instructions

Using a pencil, answer the following questions. The lab is marked based on clarity of responses, completeness, neatness, and accuracy. Do your best! Please ensure that any data measured (or recorded) includes the appropriate number of significant digits (only one uncertain digit).

This activity is divided into three sections:

- **Core** – this first section explores only the basic “core” ideas involved in understanding. Students must demonstrate a sound understand with all of their answers in this section BEFORE attempting the next section.
- **Mastery** – Your instructor will NOT review this section if the Core section above shows any misconceptions. In this section students will make predictions and apply the concepts and ideas learned above. For complete mastery it is expected that data collection and scientific procedures will be as accurate as possible. All work shown should be clear with any units included. Answers should be rounded off to the correct number of significant figures based on the data collected.
- **Ace** – Once again, your instructor will only look at this section provided he/she is confident that the above Mastery criteria has been met. In this section students will demonstrate a deeper understanding of the concepts through error analysis, experimental design etc. Physics concepts from other units already covered will often be required here.

For this project please read the criteria for Core, Mastery, and Ace as you will be choosing the appropriate level BEFORE you begin. In other words, you need only do ONE of the three levels with each level worth different amounts.

Part 1: Core (out of /15)

Instructions:

You will create a comic strip that demonstrates your understanding of the first, second, and third laws of motion.

You are to draw the cartoon (or paint etc) by hand. Do not simply use an online "create-a-comic" application. We want to see YOUR art. Creativity and originality count. We don't want to see the common representations of these laws as found on the internet.

Do your best!

Objectives:

To reinforce concepts associated with Newton's three laws of motion and to demonstrate through illustrations and dialogue an understanding of these laws.

Procedure:

You are to create an 8-frame comic strip that will illustrate Newton's three laws. Specifically, you must include:

- an eight-frame comic strip that flows together to tell a story
- characters that have dialogue about Newton's laws
- drawings that illustrate Newton's laws and correspond to the dialogue you have created
- appropriate language and illustrations
- proper spelling, grammar, and usage
- rough copies of your comic for review (discuss with teacher before proceeding with the rest of the project)

Newton's first law by Jbrojenkins





Part 2: Mastery (out of /20)

No dialogue!!

Instructions:

You will create a comic strip that demonstrates your understanding of the first, second, and third laws of motion.

You are to draw the cartoon (or paint etc) by hand. Do not simply use an online "create-a-comic" application. We want to see YOUR art.

This part will require much more detailed diagrams as you will only rely on the pictures to represent each of the laws. NO dialogue.

Do your best!

Objectives:

To reinforce concepts associated with Newton's three laws of motion and to demonstrate through illustrations ONLY an understanding of these laws.

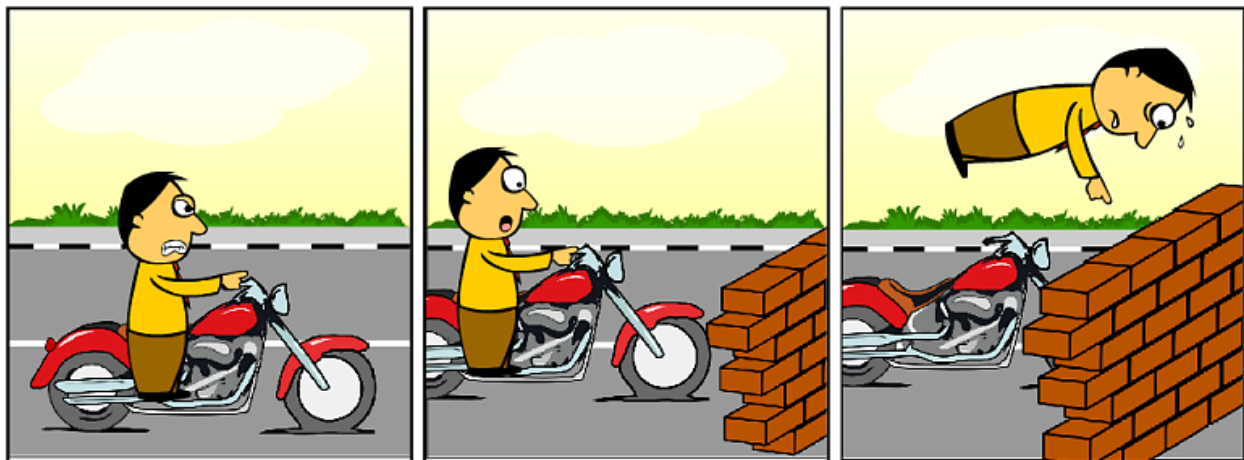
Procedure:

You are to create an 8-frame comic strip that will illustrate Newton's three laws. Specifically, you must include:

- an eight-frame comic strip that flows together to tell a story
- drawings that illustrate Newton's laws
- appropriate illustrations
- creative illustrations

DO NOT place ANY words on the page. The law you are illustrating should be obvious to the viewer. No titles please, just your name.

Can you guess the Newton's Law from the frames below?



Part 3: Ace (out of /25)

*No dialogue!! Moving pictures!! **Stop Motion Animation** (or "Claymation")*



Instructions:

You will create a **stop motion movie** that demonstrates your understanding Newton's laws of motion. Using clay, lego, or some sort of plasticine you are to create a short, animated movie. There are many tutorials online for creating good stop-motion films. We want to see YOUR art and YOUR creativity on display. Include good backdrops, props, and different colours. The goal is to make your animated "sculptures" appear to move and demonstrate Newton's Laws in an original and creative way.

This part will require careful planning as you will be relying on the movement of the sculptures from frame to frame to represent the laws.

Objectives:

To reinforce concepts associated of Newton's three laws of motion and to demonstrate through a "stop-motion" movie an understanding of these laws.

Procedure:

You are to create a stop motion moving cartoon to showcase one of Newton's three laws. Specifically, you must include:

- photos of the process (showing both YOU and the manufacturing of your sculptures)
- the short stop-motion illustrating Newton's laws
- appropriate backgrounds and props.
- creative and original demonstration of the laws.
- The laws you are depicting should be obvious to the viewer.
- Once complete please submit your videos, notes (or "storyboard"), and pictures of the creative process (include YOU with the movie characters)

Good luck and have fun!