

Name _____

Period _____

Date _____

Newton's Laws WebQuest

Introduction

1. Explain each of Newton's three laws in your own words:

a. Law of Inertia

<http://www.physicsclassroom.com/class/newtlaws/u2l1a.cfm>

b. Law of Force and Acceleration

<http://www.physicsclassroom.com/class/newtlaws/u2l3a.cfm>

c. Law of Action/Reaction

<http://www.physicsclassroom.com/class/newtlaws/u2l4a.cfm>

2. Investigate and apply Newton's Laws to football:

a. Watch the following videos

<https://www.youtube.com/watch?v=08BFCZJDn9w>

https://www.youtube.com/watch?v=qu_P4lbmV_I

<https://www.youtube.com/watch?v=e1lzB36aHD4>

b. Describe all the ways that Newton's Laws can apply in the game of football
(Remember to talk about ALL THREE LAWS).

3. Go to the following web site and answer the following questions:

<http://www.physicsclassroom.com/mmedia/index.cfm>

Watch the following animations, write down what happened and explain it using **Newton's 1st Law of Motion**.

a. **The Car and The Wall**

What happened?

Explanation:

b. **The Motorcyclist**

What happened?

Explanation:

4. Watch the presentation and learn about **Newton's 2nd Law of Motion**.

<http://www.wisc-online.com/objects/ViewObject.aspx?ID=TP1302>

a. In what direction does an object move when affected by an unbalanced force?

b. Large force=_____.....Small force=_____

c. Large Mass=_____.....Small Mass=_____

5. Watch the elephant and feather

<http://www.physicsclassroom.com/mmedia/newtlaws/eff.cfm>

a. Tell how **Newton's 2nd Law** explains why objects of different masses fall at the same rate.
(hint: look for information about the ratios discussed in the second law)

6. Go to the following web site about **Newton's 3rd Law of Motion...**

<http://www.physicsclassroom.com/Class/newtlaws/U2l4b.cfm>

- a. For every force there is one that is _____ in size but _____ in direction.
- b. Write down the five action forces and their reaction forces from the page.

ACTION FORCE(S)	REACTION FORCES(S)

- c. In a rocket what creates the initial action?

- d. In the rocket what is the equal and opposite reaction?

- e. Draw and label the rocket picture

7. **Design a Roller Coaster** – <http://www.learner.org/exhibits/parkphysics/index.html>

Design your roller coaster to achieve an overall “thumbs up” rating for Fun and Safety. List below what the individual designs would have to be for

f. Height of the First Hill =

g. Shape of the First Hill =

h. The Exit Path =

i. Height of the Second Hill =

j. The Loop =

8. **The Physics of Baseball**

<http://www.exploratorium.edu/baseball/index.html>

1) Play the Fastball Reaction Time Exhibit Game

2) How do you throw a curveball?