Article Guide: Feel the G-force, Luke: How would it feel to fly an X-wing? Part 1

http://scienceovereverything.com/2015/12/18/feel-the-g-force-luke-how-would-it-feel-to-fly-an-x-wing-part-1/

As you read each paragraph:

- Vocabulary – Box vocabulary words or words that you have not seen before
- Focus Questions – Underline in the text where these questions are as you read

The Force according to Darth Newton paragraph:

1. What two factors affect the amount of force an object experiences?

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2. What is acceleration? What are the three ways an object can accelerate?

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The force of gravity

3. Compare mass and weight:

	Mass	**Weight**
What does it measure?		
Type of units are used?		
Could it change based on gravitational field/location?		

Ain't nuthin' but a G thing

4. What does a G-force measure?

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5. What is one everyday example in which you would experience a G-force greater than one? How is your velocity changing (how are you accelerating)?

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6. How many G-forces do fighter pilots experience when they make high-speed turns? Why is too many G-forces harmful for your body?

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How fast can an X-wing go?

7. In kilometers per hour, how fast can an X-wing go? At top speed, about how long would it take you to get from the Earth to Moon in an X-wing?

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Application

Luke Skywalker has a mass of 80 kg. What would his weight (in Newtons) be on Yavin 4, a planet whose gravity pulls him down at an acceleration of 10.5 meters/sec/sec? How would that compare to Earth (where the acceleration due to gravity is 9.8 meters/sec/sec)?

a. Luke's weight on Hoth:

b. Luke's weight on Earth:

c. Is there a difference? If so, explain why?

Discussion

In the *Star Wars* movies, starfighters like X-wings, move at very high speeds. How do you think changes in direction will affect the forces acting on a pilot's body? Do you think a human would be able to pilot an X-wing? Explain your reasoning

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Vocabulary Guide

Force	
Acceleration	
Velocity	
Speed	
Gravity	
Weight	
G-Force	
Newton	
Meters/sec	
Meters/sec/sec	