

VACUUM SPIDERMAN

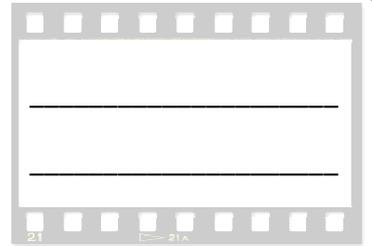
Form 3 Physics | Balancing Forces | On the Move (Part 1)



'Spiderman' Vacuum Gloves Part 2 - Bang Goes the Theory - BBC One

Name: _____

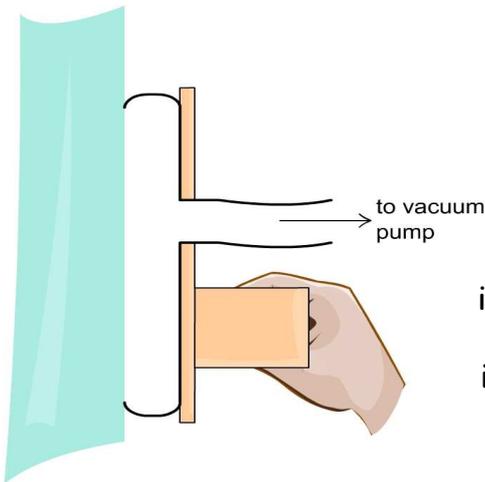
Class: _____



1. Watch the video carefully! Write down a list of Physics concepts which are related to the video. ... Write as much as you can!



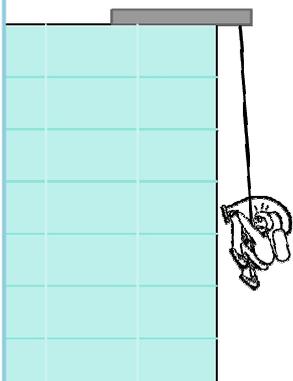
2. The Vacuum Glove



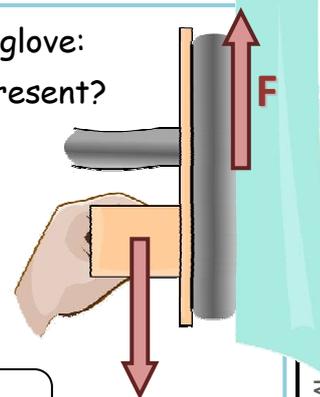
- i. The pressure **outside** the glove is called the .
- ii. Air particles are sucked out of the glove. This causes the pressure **inside** the glove to be than the pressure **outside**.
- iii. Draw arrows representing the pressure on the glove.
- iv. The pressure will create a pushing the glove against the wall.

3. Forces

- i. As soon as Vacuum Spiderman slipped down, two forces acted on him.
Draw and name these 2 forces below:



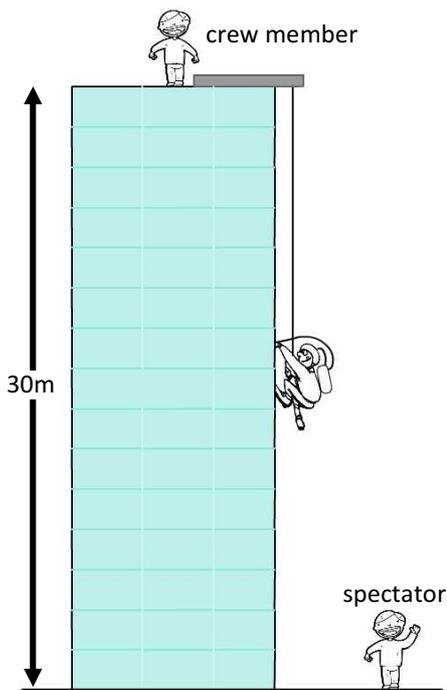
- ii. Look at the diagram of the vacuum glove: What does the upward force **F** represent?
- iii. What happened to this force when the glove was placed on exhaust grease?
- iv. What do we call materials such as *grease* or *rain* which reduce this type of force?



Jem Stansfield, a British inventor and television presenter.

Mr J. Azzopardi

4. Potential Energy



i. How high above the ground is Vacuum Spiderman when he is half way up?

ii. The vacuum pumps kit has a mass of 20kg. What is the total mass if Vacuum Spiderman has a mass of 65kg?

iii. What is the potential energy of Vacuum Spiderman when he is half way up?

iv. The crew member and the spectator have the *same mass*. What can you tell about their **Potential Energy**?

5. Energy changes

Use the paragraph below to fill in the energy changes in his body while climbing up the building.

Before the climb, Vacuum Spiderman had a good breakfast. He pushed himself up the building while commenting about his climbing. After about a quarter of an hour, he arrived at the top of the building. He rested for a while until his body cooled down as he felt exhausted.

6. Power



The two 1500W pumps used to suck air out of the vacuum gloves.

He used **two 1500W** vacuum cleaner pumps. It took Vacuum Spiderman about 15 minutes to climb up the building. How much electrical energy was supplied to these pumps?

total *power* (W): _____

time taken (s): _____

Energy (J) :