

Physics Internet Scavenger Hunt

Key provided by J. Hladun 2008

Amusement Park Physics

1. Which horses on a carousel are moving the fastest: the ones on the inside or the ones on the outside? Explain your choice. *Outside, because they cover a greater distance in the same amount of time*
2. Which Law of Motion explains what happens during a ride on the bumper cars? Give an example. *3rd law – Each action has an equal but opposite reaction (seatbelts)*
3. Where do riders have a feeling of “weightlessness” on a pendulum-type ride? At what point on the pendulum-type rides do riders feel the highest g-forces? *At the top because they come disconnected from the seat & so “feel” weightless*
4. Explain the “weightless water” trick. Hint: Go to the Free Fall section. *Drop a full cup of water with holes at the top and the water won’t leak because the water and cup fall at the same rate*
5. Out of the 270 million people who visit amusement parks annually, how many require a trip to the emergency room? *7000 (.00259% of all visitors); 1/250 million die*

Simple Machines

- A. List 6 types of simple machines. *Inclined plane, level, wedge, screw, pulley, wheel & axle*
- B. What is the definition of a compound machine? *2+ simple machines working together*

Speed Machines

- A. How long can the SR-71 operate (at top speed) before it needs refueling? *1 hour*
- B. Who devised the unit of power called the horsepower? *James Watt*
- C. What type of vehicle is the Spirit of America? *Car* What is its top speed? *675 mph*

Rube Goldberg

- A. Complete: Rube Goldberg lived from *1883* to *1970* and was a Pulitzer Prize winning *cartoonist, sculptor, and artist.*
- B. How many steps were involved in Rube Goldberg’s pencil sharpener? *__18__*

Physics Classroom: Newton’s Law

- A. Give an example of Newton’s 1st Law of Motion. *Coffee spilling in a moving car; seatbelts*
- B. What formula is used to show Newton’s 2nd Law of Motion? *$F=ma$*
- C. In Newton’s 3rd Law, how many forces always act at once? Give an example of how this works. *2 forces – bug on window*

The Sundry

- A. What medium does sound travel the fastest through? *Solid*
- B. What are the 3 parts of the ear? Draw & label a sketch of the ear. *Outer, middle & inner*

C. Go to the Doppler Effect Applet. Experiment! What do you notice about the sound of the jet as it gets closer to the person? How does the jet speed affect the sound? *Louder as it gets closer; speed causes sonic booms...the more Machs the louder the boom*

Funderstanding

Work together as a group to make the roller coaster work. What is the coaster's top speed? Sketch your coaster here:

Get your teacher's initials to show that you have successfully completed the coaster. _____

Shockwave Physics

1. Click the red button to turn on the red light. What do you observe about the color of the shadow and the color of the background? *Grey*
2. Turn off the red light and then click the blue button to turn on the blue light. What do you observe about the color of the shadow and the color of the background? *Grey, blue*
3. Leave the blue light on and click to turn on the red light. What do you observe about the color of the shadows (*red & blue*) and the color of the background (*pink*)?
4. Leave the blue and red lights on and click to turn on the green light. What do you observe about the color of the shadows (*yellow, pink, & blue*) and the color of the background (*white*)?

Sport Science

- A. Where would you have the best chance for hitting a home run: Denver, Colorado or San Diego, California? Why? *Denver – higher altitude reduces air resistance*
- B. How much force does it take to break a hockey stick? *1 ton*
- C. Who is credited for developing the chain drive (chain and cog system) for bicycles? *Leonardo DaVinci*

Sandlot Science

Click as follows Home >Optical Illusions>Optical Illusions>Distortions>Breathing Square.

- A. What appears to be happening? *Square is changing in size*
- B. Click on the red shapes to change their size. What do you observe about the blue object? *Object doesn't change size at all*

Click "Moon Illusions" and then Demonstration from the menu on the left, then click on the picture of the moon. Use the mouse to move the moon in the sky. What do you observe? What causes this illusion? *It gets bigger on the horizon; scientists aren't sure, but they think it's that humans make comparisons between the moon and objects it is close to (which there are more of at the horizon)*

Click "Typography" in the left hand menu and then choose "Which is an ambigram?"

- A. What is an ambigram? *A word that has symmetrical letters*
- B. Which words in the table are ambigrams? *Code, box, deck, bed, dice, etc...*