

FUTURE FACES OF PHYSICS

Jeopardy



Host Manual
Game 1

The host is responsible for introducing the game, reading the categories at the start of each round, reading the clues, and judging the responses. The responses do not appear on the Jeopardy board, they are given only in this manual. If no correct response is given to a clue, the host is responsible for reading the correct response.

Introducing the Game

The Host should start the game by welcoming the players and audience and letting them know that this is *Future Faces of Physics Jeopardy*, and that *Future Faces of Physics* is the theme for SPS this year. Then he or she should briefly explain how the game works, being sure to highlight these rules:

1. Teams may not buzz in until the question has been read.
2. Teams can discuss responses prior to buzzing in, but all conversation must stop when someone buzzes in. The person that hits the buzzer must be the same person that gives the response.
3. Responses must be given in the form of a question.
4. The Host (or another person determined by the Host) is the final judge on whether an answer will be accepted.

Introducing the Categories

At the start of each new round, the Host reads the categories aloud and gives brief explanations when necessary (explanations are given in parenthesis next to the category heading in this manual, where appropriate).

Reading the questions

After a team selects a clue and the Game Operator opens the corresponding slide, the Host reads the clue. The Host should take his or her time reading—teams will not be able to buzz in until the Host has finished reading the clue and the Game Operator clears the buzzer system.

Judging the answers

Correct responses to the clues are given in this manual. Occasionally teams may give responses that are similar but not identical to the responses given in the manual, or they may interpret a clue differently than was intended. The Host has final say on whether a response is acceptable. If you feel more comfortable, you can delegate this role to another person not participating in the game.

Warning: Do not turn the page if you plan to play the game!

GAME 1: Jeopardy Round

Know your Stats

100. The percentage of bachelor's degrees earned by women in this ancient science is nearly double that of physics.

-What is astronomy?

200. Together these two minority groups make up over 25% of the U.S. population – but they earn only 9% of physics bachelor's degrees.

-What are Hispanic/Latina/Chicano and African American?

300. Of 10, 30, and 50 about this percent of employed physics bachelor's go right into high school teaching after graduation.

-What is 10%?

400. Of 10, 30, and 50 about this percentage of physics bachelor's degree recipients become physics professors.

-What is 10%?

500. Of A, B, C the line representing the percent of women in physics.

-What is A?

Light up my life

100. Found in "Rainbow Glasses," this splits white light into its various colors by interference effects.

-What is a grating? (or diffraction grating)

200. Light travels through optical fibers without leaking because of this.

-What is total internal reflection?

300. Daily Double: Einstein's analysis of this experiment is considered by many to be conclusive evidence of photons.

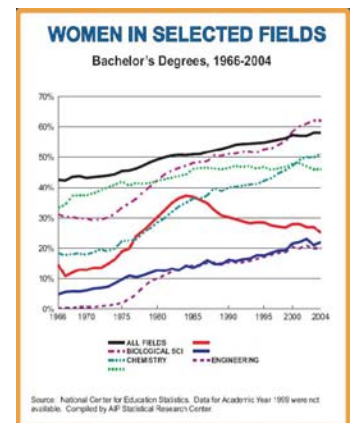
-What is the photo-electric effect?

400. Ironically, this is the name given to the type of radiation spectrum given off by the sun or an incandescent light bulb.

-What is black-body?

500. First detected by Vera Rubin, this mysterious substance warps light paths to produce multiple images, as seen in recent Hubble photographs.

-What is dark matter?



Past Faces of Physics (first names are not required)

100. This physicist calculated that black holes should emit radiation until they evaporate. He is almost completely paralyzed from ALS, or Lou Gehrig's disease.

-Who is Stephen Hawking?

200. The Nobel Prizes in Chemistry has been given to 3 women. This woman and her daughter each received one for work on radioactivity.

-Who is Marie Curie?

300. In 1965, this American physicist received the Nobel Prize in Physics for his work on quantum electrodynamics.

-Who is Richard Feynman?

400. In the late 1930s, she and her colleagues discovered nuclear fission. She published the physical explanation of it with her nephew, Otto Robert Frisch.

-Who is Lise Meitner?

500. This iconic physicist was engaged in many civil rights activities and co-chaired the American Crusade to End Lynching.

-Who is Albert Einstein?

Extreme Planets

100. Even though it's not nearest the sun, this planet has the highest mean surface temperature.

-What is Venus.

200. This former planet has a moon with nearly half its diameter.

-What is Pluto?

300. This planet has the largest angular momentum about our sun.

-What is Jupiter?

400. Of the 8 official planets, it could almost be considered a double planet, with the largest moon relative to its size.

-What is the Earth?

500. Galileo described this lowest density planet as having "ears".

-What is Saturn?

In the Lab

100. The helical toy that “walks” down stairs and is used to demonstrate transverse and longitudinal waves.

-What is a Slinky?

200. The "machine" often used to measure "g" made from a pulley, string, and masses.

-What is Atwood's machine?

300. This "scope" uses electron beams incident on a phosphor screen, like old-style boxy televisions.

-What is an oscilloscope?

400. The classic “firearms” experiment where a ball is fired into a swing-like apparatus and conservation laws are used to get its initial speed.

-What is the ballistic pendulum?

500. While the original data analysis is now considered "slippery", this lab staple is often used to show that charge is quantized.

-What is the Millikan Oil Drop Experiment?

Double Jeopardy

Famous Pairs (first names are not required)

200. In 1886, these two used an interferometer to rid the world of the notion that the universe is permeated by ether.

-Who are *Albert Michelson and Edward Morley*?

400. In 1903, this husband and wife shared a Nobel Prize for their joint research on "the radiation phenomena."

-Who are *Marie and Pierre Curie*?

600. In 1922, these two men showed that electron spin is quantized in a famous experiment performed in Frankfurt, Germany.

-Who are *Otto Stern and Walther Gerlach*?

800. Paired with T. D. Lee, or "yin", this scientist received the Nobel Prize in Physics in 1957 for parity violation.

-Who is *C. N. Yang*?

1000. In 1963, she won the Nobel Prize in physics with J. Hans Jensen for the nuclear shell model.

-Who is *Maria Goeppert-Mayer*?

Pop Culture

200. This effect may add to the drama of an explosion in space, as in the *Star Wars* movies, but it doesn't sit well with physicists.

-What is *sound*?

400. Daily Double: In 2006, particle physicist Michael Binger placed third in this world-class event, which draws Texas Hold-Em players from all over.

-What is the *World Series of Poker*?

600. Physicist Tim Gay studies polarized electrons and was the academic advisor on this VH1 reality TV show starring the drummer from Motley Crue.

-What is *Tommy Lee Goes to College*?

800. The tagline of this "Physics of" book by condensed matter physicist Diandra Leslie-Pelecky is *How to Make Steel + Gas + Rubber = Speed*.

-What is the *Physics of NASCAR*?

1000. In this 1994 romantic comedy, an auto mechanic chasing Einstein's intelligent niece pretends to have invented a fusion-powered spacecraft.

-What is *IQ*?

Electronics

200. Also known as a condenser, this device stores charge.

-What is a capacitor?

400. This device passes current in only 1 direction.

-What is a diode?

600. This device is used to change the voltage in AC Circuits.

-What is a transformer?

800. Electrons flow opposite the current in a circuit, due to his unlucky choice for charge signs.

-Who is Ben Franklin?

1000. The percentage uncertainty indicated in this 1K Ohm resistor, with brown, black, red, and gold bands.

-What is 5%?



On the Hill

200. Increasing diversity in science is a priority of this agency, commonly known as “NSF”, which funds fundamental science and engineering.

-What is the National Science Foundation?

400. Bart Gordon, chair of the House Committee on Science and Technology, represents this state.

-What is Tennessee?

600. Often called “RAGS”, this 2006 report warns that the U.S. may be falling behind other countries in science competitiveness.

-What is Rising Above the Gathering Storm?

800. Daily Double: Before becoming science advisor to the President, Physicist Jack Marburger was director of this Long Island-based national lab, which specializes in nuclear physics.

-What is Brookhaven National Laboratory?

1000. There are currently two congressmen with PhDs in physics. Name one.

-Who is who is Vernon Ehlers or Rush Holt? And as of March 8, 2008, Bill Foster.

Partners in Crime

200. This “core” part of an atom is also the name of the physics student section of the National Science Digital Library.

-What is the Nucleus?

400. SPS is housed together with this organization, which is the physics honor society.

-What is Sigma Pi Sigma?

600. SPS operates within this institute, an umbrella organization for SPS, the physics honor society, and ten other professional science societies.

-What is the American Institute of Physics?

800. Recent graduates who participate in this program commit to teach for two years in rural or urban schools in need.

-What is Teach for America?

1000. This organization addresses the retention and success of people in STEM fields through online mentoring.

-What is MentorNet?

Final Jeopardy

The Ivy League

By approving Edward Bouchet's dissertation in 1876, *On Measuring Refractive Indices*, this school became the first American university to grant a PhD to an African American.

-*What is Yale?*