

A study guide for  
Mysteries of the Universe – A Science Odyssey

Who was George Hale – what did he “do” for astronomy?

In the early 1900’s what was the role of women in science?

Who was Heneretta Levit? What did she discover?

Who was Edwin Hubble?

Hubble had the “Gift of ...”

While studying the Andromeda galaxy, also known as M31, Hubble discovered a Cepheid that was measured to be \_\_\_\_\_ miles away.

Hubble further studied data from galaxies for 5 years, measuring the “red shift” of light from these galaxies. What is “red shift” and how is it different from “blue shift”?

When Hubble plotted (graphed) motion vs. distance for the distant galaxies what did he discover? What is it called?

This discovery of Hubble confirmed something in Einstein’s theories that he “tried to correct”. Einstein later said that this “correction” was the greatest blunder of his career. What was this correction?

In 1902 Einstein got a job at a Swiss Patent Office, what was his job title?

Einstein’s job taught him how to \_\_\_\_\_.

What was Einstein’s basic hypothesis that changed the way physics is done?

What is light according to Maxwell?

What is Einstein's "thought experiment"?

Why should objects get heavier (more dense, have more mass) as they move?

Special Relativity applies to \_\_\_\_\_ velocity, General Relativity applies to velocity.

Einstein won the first Nobel Prize for \_\_\_\_\_.

What is Quantum Mechanics?

Who was Neils Bohr?

Who was Ernest Rutherford?

What was the "paradox of the Rutherford atom"?

How does Bohr "save" the Rutherford model of the atom?

Quanta came from the ideas of \_\_\_\_\_ and \_\_\_\_\_.

A disagreement was set up in the classical view of matter vs. Bohr and Heisenberg. Erwin Schrodinger proposed another solution for the atom that viewed electrons as \_\_\_\_\_ and not as \_\_\_\_\_. In 1926 Heisenberg proposed a \_\_\_\_\_ that helped to explain the Bohr atom possibilities.

In 1927 at the Solvay Council in Brussels Belgium, Einstein and Bohr had many “discussions” about the model of the atom. In a typical day.....

Einstein’s common response to Bohr was that “God does not \_\_\_\_\_ .” and Bohr’s response was “Nor is it our business to \_\_\_\_\_ to God how He should run the world”.

Who is Jocelyn Bell-Burnell? What did she discover?

How much would a “spoonful of a neutron star weigh”?

Based on the idea of a neutron star, \_\_\_\_\_ predicts the existence of a “black hole”.

Until recently there were two basic theories (explanations) of the universe...

The Big Bang (describe the theory)

And Steady State Theory (describe the theory)

Robert Dickey proposed finding evidence to support \_\_\_\_\_. What is the evidence?  
Who actually found the evidence?

What important proposal did Murry Gell-Mann make for physics?

What are the 3 fundamental particles called?

What is a Super Conducting Super collider? What happened to it?

What is “String Theory”?

String Theory is difficult for many to accept because it requires \_\_\_\_\_ or more dimensions instead of the “normal three” that we are familiar using.

What is the “Big Crunch”?

What is “Dark Matter”?