

# Milestones in Cosmology

Cosmology · Answer Key · 15 Questions

---

**1. Who is credited with formulating the first relativistic theory of gravitation that forms the basis of modern cosmology, publishing it in 1915?**

- A) Isaac Newton
- B) Albert Einstein**
- C) Stephen Hawking
- D) Edwin Hubble

**2. What pivotal observation in 1929, based on redshift measurements of distant galaxies, provided strong evidence for the expansion of the universe?**

- A) The detection of the Cosmic Microwave Background radiation
- B) The discovery of dark matter's gravitational effects
- C) Hubble's Law**
- D) The observation of gravitational waves

**3. The first detection of the Cosmic Microwave Background (CMB) radiation, a key piece of evidence for the Big Bang theory, was made in 1964 by Arno Penzias and whom?**

- A) Robert Wilson**
- B) Carl Sagan
- C) Vera Rubin
- D) Georges Lemaître

**4. Which space telescope, launched in 1990, revolutionized our understanding of the universe's scale and age by providing unprecedentedly clear images and distance measurements of galaxies?**

- A) James Webb Space Telescope
- B) Chandra X-ray Observatory
- C) Spitzer Space Telescope
- D) Hubble Space Telescope**

**5. What theoretical concept, first proposed by Georges Lemaître in 1927, suggests that the universe originated from a single, incredibly dense point?**

- A) The Steady State Theory
- B) The Big Crunch Theory
- C) The Big Bang Theory**
- D) The Oscillating Universe Theory

**6. Who was the first to propose that the universe was not static but expanding, based on his interpretation of Einstein's General Relativity equations in 1927?**

- A) Alexander Friedmann
- B) Georges Lemaître**
- C) Howard Robertson
- D) Arthur Walker

**7. The first direct detection of gravitational waves, ripples in spacetime predicted by Einstein, was achieved in 2015 by an experiment led by which collaboration?**

- A) WMAP
- B) LIGO**
- C) Planck
- D) COBE

**8. Which early 20th-century astronomer, using the Hooker Telescope at Mount Wilson Observatory, first demonstrated that 'spiral nebulae' were actually distant galaxies outside our own Milky Way?**

- A) Vesto Slipher
- B) Harlow Shapley
- C) Edwin Hubble**
- D) Heber Curtis

**9. The first detailed map of the Cosmic Microwave Background radiation, providing crucial support for the Big Bang model, was produced by which NASA satellite launched in 2001?**

- A) WMAP (Wilkinson Microwave Anisotropy Probe)**
- B) COBE (Cosmic Background Explorer)
- C) Planck (ESA satellite)
- D) Hubble Space Telescope

**10. The theoretical framework that describes the universe as being composed of roughly 68% dark energy, 27% dark matter, and only 5% ordinary matter was significantly advanced by observations from which space observatory in 2013?**

- A) Hubble Space Telescope
- B) Chandra X-ray Observatory
- C) Planck**
- D) Spitzer Space Telescope

**11. Who is credited with the first quantitative measurements of galaxy redshifts, indicating that most galaxies are receding from us, a precursor to Hubble's Law?**

- A) Edwin Hubble
- B) Vesto Slipher**
- C) Carl Wirtz
- D) Albert Einstein

**12. The concept of inflation, a period of exponential expansion in the very early universe, was first proposed in the early 1980s by which physicist?**

- A) Alan Guth**
- B) Andrei Linde
- C) Paul Steinhardt
- D) John Barrow

**13. Which instrument, launched in 1977, provided the first comprehensive survey of the Milky Way's radio emission, helping to map its structure?**

- A) Very Large Array (VLA)**
- B) Arecibo Observatory
- C) Green Bank Telescope
- D) Effelsberg 100-m Radio Telescope

**14. The first evidence for the existence of dark matter, observed as an anomaly in the rotation of galaxies, was published by which astronomer in 1933?**

- A) Fritz Zwicky**
- B) Vera Rubin
- C) Jan Oort
- D) J. D. Bernal

**15. In 1998, observations of distant supernovae led to the surprising discovery that the expansion of the universe is accelerating. This discovery was primarily attributed to teams led by Saul Perlmutter, Brian Schmidt, and whom?**

- A) Adam Riess**
- B) Stephen Hawking
- C) Jeremiah Ostriker
- D) Martin Rees