

Study Guide for Dark Matter Quiz

Your first quiz will be available on Launchpad at the end of Week 4. It will be timed (45 min), and in multiple-choice format. You will have seven days to complete it.

Caution: Once you start the quiz, you **cannot pause!** It **will** time-out after 45 minutes!

Here is a study guide containing “Things You Should Know.” (Hint, hint!)

1. What are the three independent lines of evidence supporting the existence of Dark Matter?
2. Describe in detail the discoveries made by Fritz Zwicky
3. Describe in detail the discoveries made by Vera Rubin
4. Describe in detail the predictions of Albert Einstein regarding light, gravity, and spacetime and how they are relevant as evidence of Dark Matter
5. Describe the evidence supporting the existence of Dark Energy
6. When did the Universe’s expansion begin to accelerate?
7. What is the definition of temperature?
8. What is Kinetic Energy?
9. What is the relationship between frequency and energy in light waves?
10. What is a particle of light?
11. What is the relationship between electron excitation and photon emission?
12. What is the relationship between mass and gravity?
13. What is meant by “gravitational equilibrium” in the Intracluster Medium?
14. What are MACHO’s and why were they ruled out as candidates for Dark Matter?
15. What are WIMP’s?
16. Why were neutrinos ruled out as candidates for Dark Matter?
17. Whose laws are cited as the rules governing orbital behavior that ultimately revealed discrepancies in measuring galaxy rotation and galaxy cluster orbits?
18. What is gravitational lensing?
19. What are currently the leading candidates for Dark Matter and what branch of physics predicts them?
20. What are the Four Fundamental Forces in the Universe?
21. What interactions do we NOT see with Dark Matter?
22. Where is research currently being undertaken to discover possible Dark Matter particles?
23. What means do we use to determine velocities of luminous objects?
24. What means do we use to measure extreme astronomical distance?
25. What are the percentages of Dark Matter, Dark Energy, and Normal Matter in the Universe?
26. How do we define “mass”?
27. How do astronomers estimate the amount of “normal matter” in a galaxy?
28. What is the relationship of an object’s orbital velocity and its distance from the Primary?
29. What is the relationship of an object’s orbital velocity and the mass of the Primary?
30. What is the relationship of the temperature of a gas and its pressure?