

## ASTR Things You Need to Know Part 2

1	What is the mass limit of a neutron star?	
2	The mass limit of neutron star is called <u>  ?  </u>	
3	What supports the weight of a neutron star?	
4	How are the neutrons created in a neutron star?	
5	Why is there no such thing as proton degeneracy pressure?	
6	Discovered the first pulsar	
7	How does the “lighthouse model” describe the behavior of a pulsar?	
8	The first pulsar was discovered where?	
9	What was the designation of the first pulsar, what did the initials mean, and why?	
10	Generally, how large are neutron stars?	

11	What happens to a neutron star if it exceeds $3m_{\odot}$ ?	
12	What is the density of a singularity as predicted by the mathematics?	

13	What is the event horizon?	
14	What is the Schwarzschild radius?	
15	What is escape velocity and how does it pertain to the event horizon and the Schwarzschild radius?	
16	What particles are involved in Hawking radiation, and in what manner?	
17	Discovered supermassive black hole in center of Milky Way galaxy	
18	Describe the singularity in spinning black hole	
19	A spinning black hole is called _?_	

20	What is the region just outside the event horizon of a spinning black hole called, and what takes place there?	
21	What Newtonian concept was integral in detecting and establishing the mass of the supermassive black hole in the center of our galaxy?	
22	In a wave, velocity = ?	
23	In a wave, if frequency increases, wavelength ?	

24	Greek symbol for wavelength	
25	Definition of Doppler Effect	
26	What happens to the frequency of a wave if the wave source is approaching the observer?	
27	What happens to the wavelength of a wave if the wave source is receding from the observer?	
28	What happens to the velocity of a sound wave if the wave source is approaching the observer?	

29	What did Edwin Hubble discover?	
30	What standard candle did Hubble employ to determine the distance to Andromeda Galaxy?	
31	Who predicted an expanding universe two years before Hubble's discovery?	
32	What are photons and what is one of the ways they are created?	
33	What is "red shift?"	
34	What does the Hubble Law establish in the relationship between distances and recessional velocities of galaxies?	
35	Do receding galaxies move <i>through</i> space? Why or why not?	

36	As spacetime expands, what happens to the wavelengths of light?	
37	Why are distant objects further away than observations indicate?	

38	If, while observing a distant galaxy, "Z" is greater than 0.1 then velocity is considered to be _?_	
39	Predicted the existence of the Cosmic Microwave Background	
40	Discovered the Cosmic Microwave Background	
41	What was originally thought to be the cause of static in Bell Labs antenna	
42	Prominent advocate of Steady State theory	
43	What feature of Steady State theory proved to be true?	
44	What discovery effectively proved Big Bang theory over Steady State?	
45	Why can't we observe anything prior to 380,000 years after Big Bang?	
46	Feature of Big Bang theory that has universe expanding from singularity to size of solar system in $10^{-38}$ sec	
47	Theory proposed by Alan Guth	

48	What standard candle was observed that indicated that the universe's rate of expansion was accelerating?	
49	What is the ultimate fate of the universe?	
50	What are the four fundamental forces in the universe?	
51	What theory best describes the Strong Nuclear Force?	
52	What theory best describes Gravity?	
53	What theory best describes Electromagnetism?	
54	What theory best describes the Weak Nuclear Force?	
55	The Strong Nuclear Force is associated with _?_	
56	The Weak Nuclear Force is associated with _?_	
57	Electromagnetism is associated with _?_	
58	What naturally occurring phenomenon brings General Relativity and Quantum Physics into conflict, and why?	

59	What theory may serve to unify General Relativity and Quantum Physics?	
60	What is the basic proposition of String Theory?	
61	Originally, String Theory proposed _?_ dimensions	
62	What became a major problem with String Theory, and how was it resolved?	
63	What is the weakness of String Theory?	
64	What is the strength of String Theory?	