


- I can describe how we believe the universe began
- I can name the proof for the big bang theory
- I can describe red & blue shift
- I can explain the differences between terrestrial & jovian planets



UNIVERSE

-EVERYTHING that exists in any place
(ALL the space, matter & energy in existence)



Sun

Majority of scientists today believe the universe began with **BIG BANG**


BIG BANG Theory

Gigantic explosion of matter which began to **EXPAND** & organize into the earliest atoms

Universe believe to be 10-15 billion years old

Solar system about 5 billion years old

Big Bang Theme Song



The favourite practical joke amongst Big Bang theorists.


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PROOF of the BIG BANG

1) Doppler Effect tells us the universe is expanding and the rate of expansion is increasing


Red = going away from Earth


Blue = going toward Earth




Doppler Shift due to Stellar Wobble

OBJECT RECEDING:
LONG RED WAVES





OBJECT APPROACHING:
SHORT BLUE WAVES



Doppler Animation

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Classification of Galaxies

Elliptical galaxies

E0 E5

Normal spirals

S0 Sa Sb Sc


SBa SBb SBc

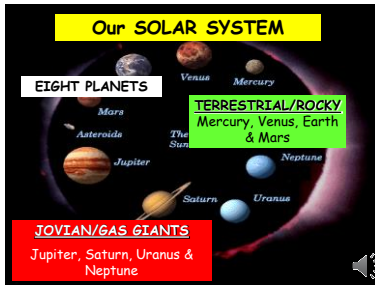
Barred spirals

Atoms cluster to become **STARS**

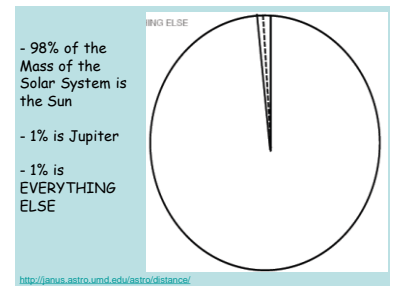
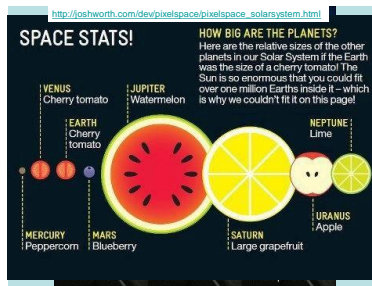
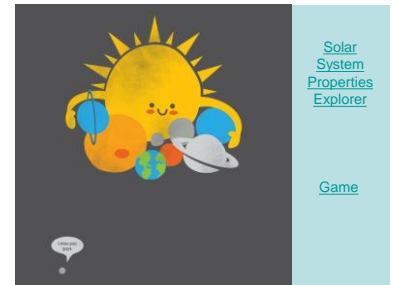
Stars & planets are clustered in **GALAXIES**

Galaxies are collections of billions of stars, gas & dust held together by gravity





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Solar System Data

Celestial Object	Mass Distance from Sun (millions)	Period of Revolution (Subject, years)	Period of Rotation at Equator	Eccentricity of Orbit	Equatorial Diameter (km)	Mass (Earth = 1)	Density (g/cm ³)
SUN	—	—	27 d	—	1,392,000	333,000.00	1.4
MERCURY	57.9	88 d	59 d	0.206	4,879	0.06	5.4
VENUS	108.2	224.7 d	243 d	0.007	12,104	0.82	5.2
EARTH	149.6	365.26 d	23 h 56 min 4 s	0.017	12,756	1.00	5.5
MARS	227.9	687 d	24 h 37 min 23 s	0.093	6,794	0.11	3.9
JUPITER	778.4	11.9 y	9 h 50 min 30 s	0.048	142,984	317.83	1.3
SATURN	1,426.7	29.5 y	10 h 14 min	0.054	120,536	95.16	0.7
URANUS	2,871.0	84.0 y	17 h 14 min	0.047	51,118	14.54	1.3
NEPTUNE	4,496.3	164.8 y	16 h	0.009	49,528	17.15	1.8
EARTH'S MOON	149.6 (384,000 from Earth)	27.3 d	27.3 d	0.055	3,476	0.01	3.3

Other satellites orbiting our SUN:

1. **ASTEROIDS**

-Solid rocky or metallic body that orbits the sun between Mars & Jupiter

2. **COMETS**

-Ices of water & methane mixed with rocky or metallic solids

When either one hits planet it creates impact **CRATERS**

3. METEOR

- small piece of a comet or asteroid also called "shooting stars"
- Appears as a streak of light



- Universe is 25 billion LIGHT YEARS across and contains everything!

LIGHT-YEAR

- Distance light can travel in **ONE YEAR** (about 10 trillion km)

FUTURE OF UNIVERSE

- As of NOW ...Universe is expanding BUT WILL IT CONTINUE??

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