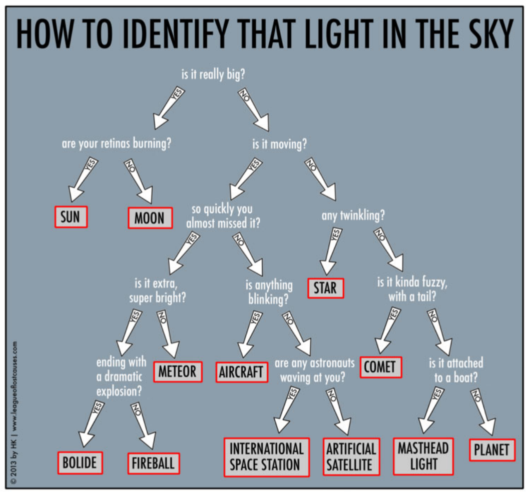
Announcements

- You have a test on Friday!
  - All study content posted with solutions
- Email me if you'd like to use one of my calculators!
- No WebWork due on Friday or Monday!
- Poll: `rembold-class.ddns.net`

APOD!


HOW TO IDENTIFY THAT LIGHT IN THE SKY
is it really big?
YES
NO
are your retinas burning?
is it moving?
YES
NO
YES
NO
SUN
MOON
so quickly you almost missed it?
any twinkling?
YES
NO
YES
NO
is it extra, super bright?
is anything blinking?
STAR
is it kinda fuzzy, with a tail?
YES
NO
YES
NO
YES
NO
ending with a dramatic explosion?
METEOR
AIRCRAFT
are any astronauts waving at you?
COMET
is it attached to a boat?
YES
NO
YES
NO
YES
NO
BOLIDE
FIREBALL
INTERNATIONAL SPACE STATION
ARTIFICIAL SATELLITE
MASTHEAD LIGHT
PLANET
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Understanding Check

The rocket below is being reflected in a curved mirror. How will its image compare to the rocket itself?

A. Flipped and Larger
B. Flipped and Smaller
C. Same orientation and Larger
D. Same orientation and Smaller

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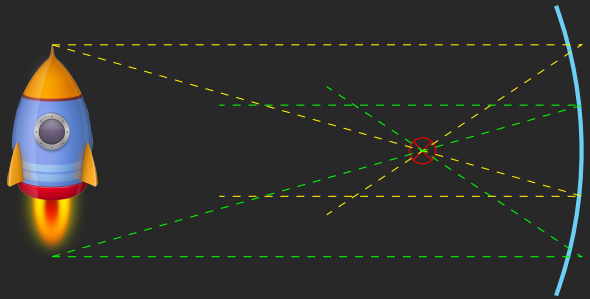

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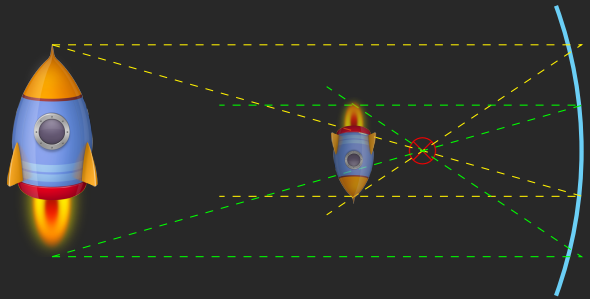
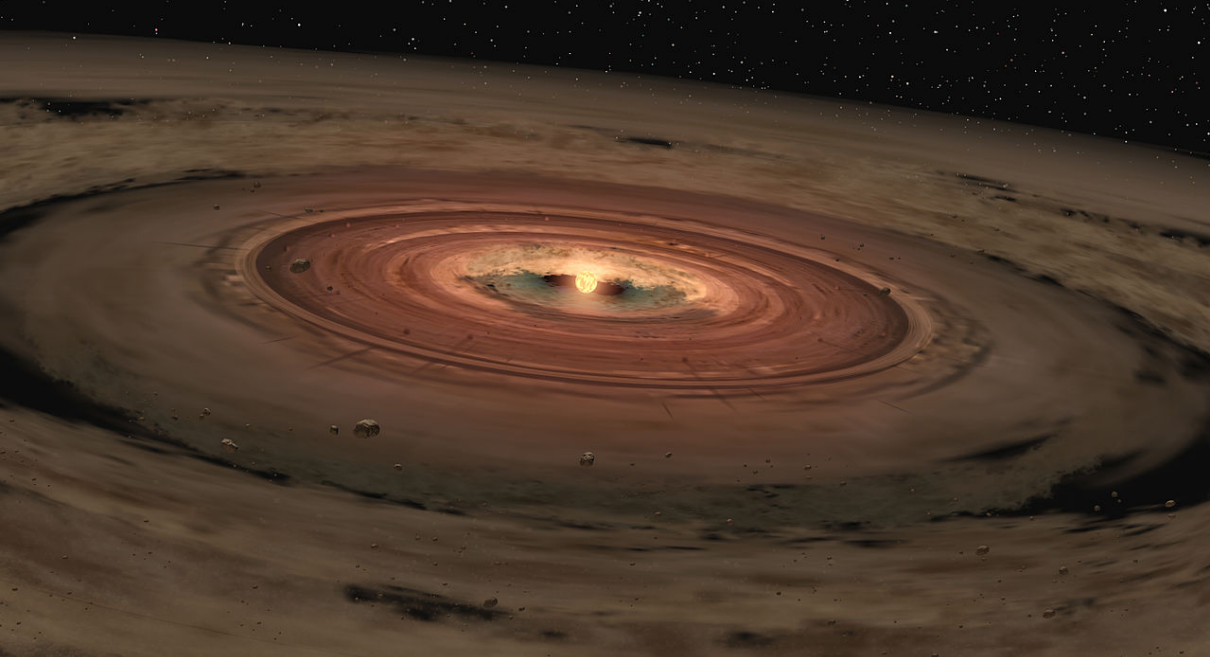
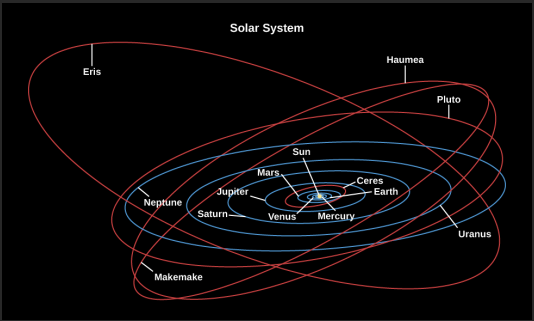


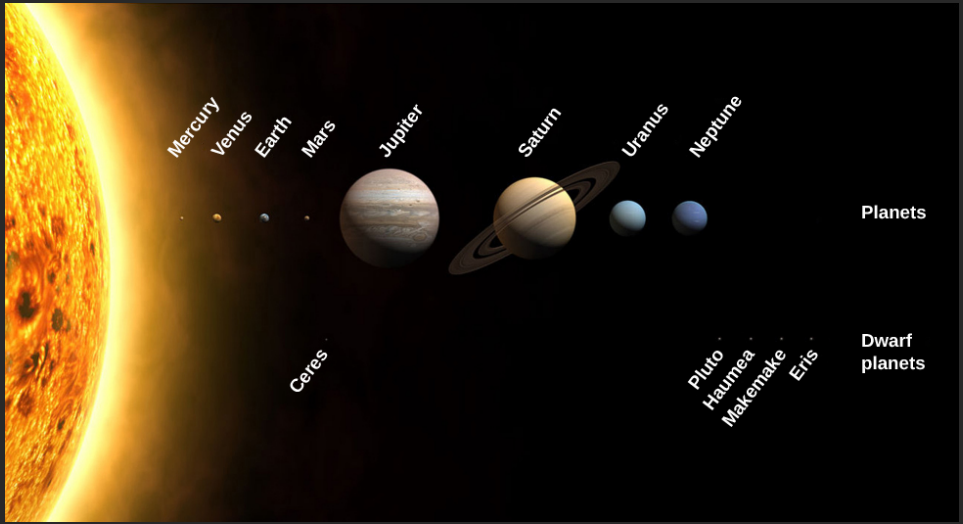


A Guided Tour: Overview

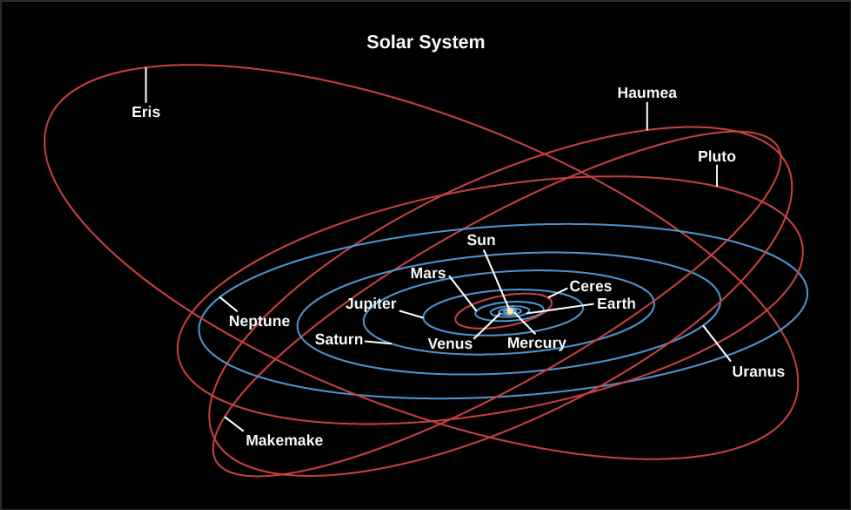
- Most planet's orbits lie roughly in the same plane, so the solar system looks basically flat
- All the planets orbit the Sun in the same direction
  - Counter-clockwise when viewed from above
  - *Most* planets also spin counter-clockwise



All our planets



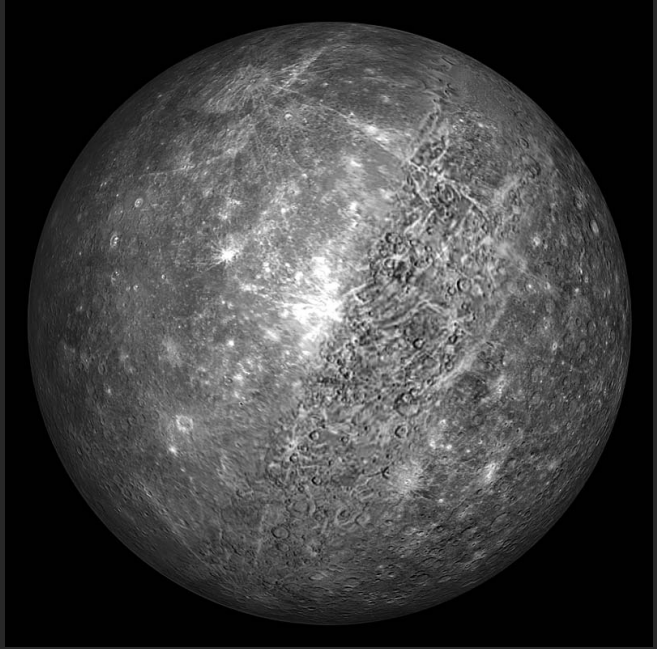
Orbital Patterns

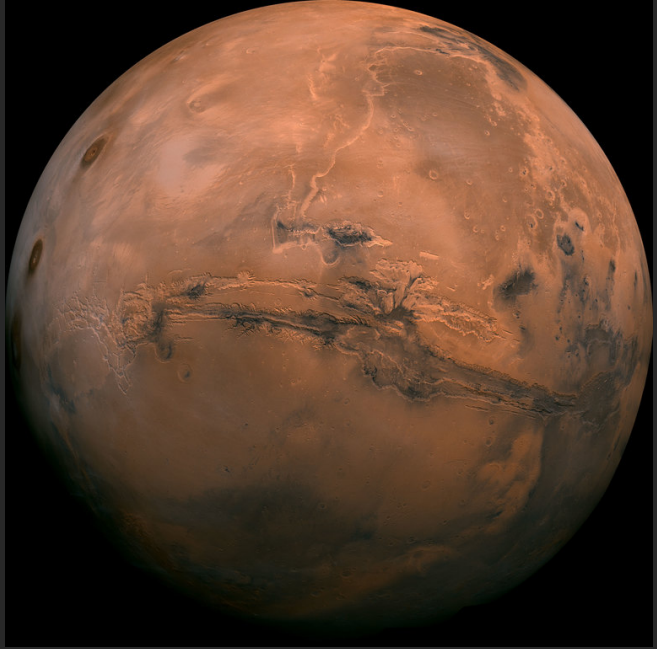


Eye of the Tiger (Rocky Theme)

Let's look at the inner four, "terrestrial" planets:

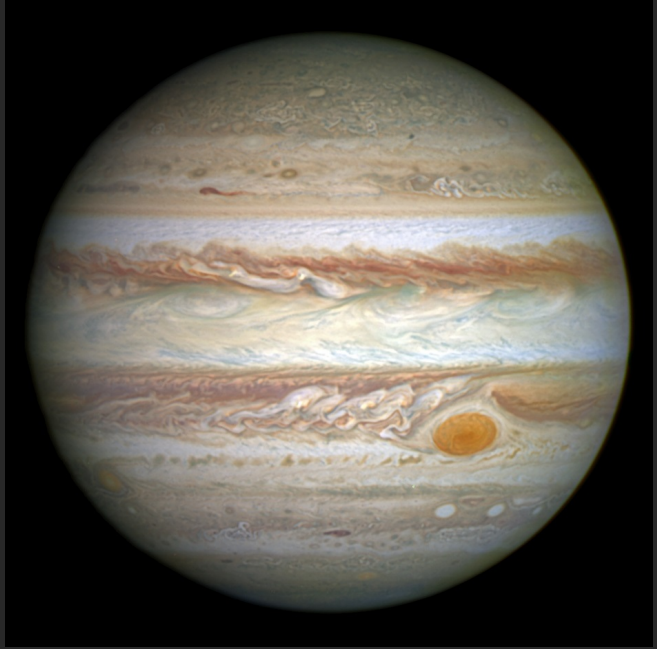
- Mercury, Venus, Earth, Mars
- Generally small, as planets go
- Comprised mostly of rocks and metal
- Orbits are close to the Sun

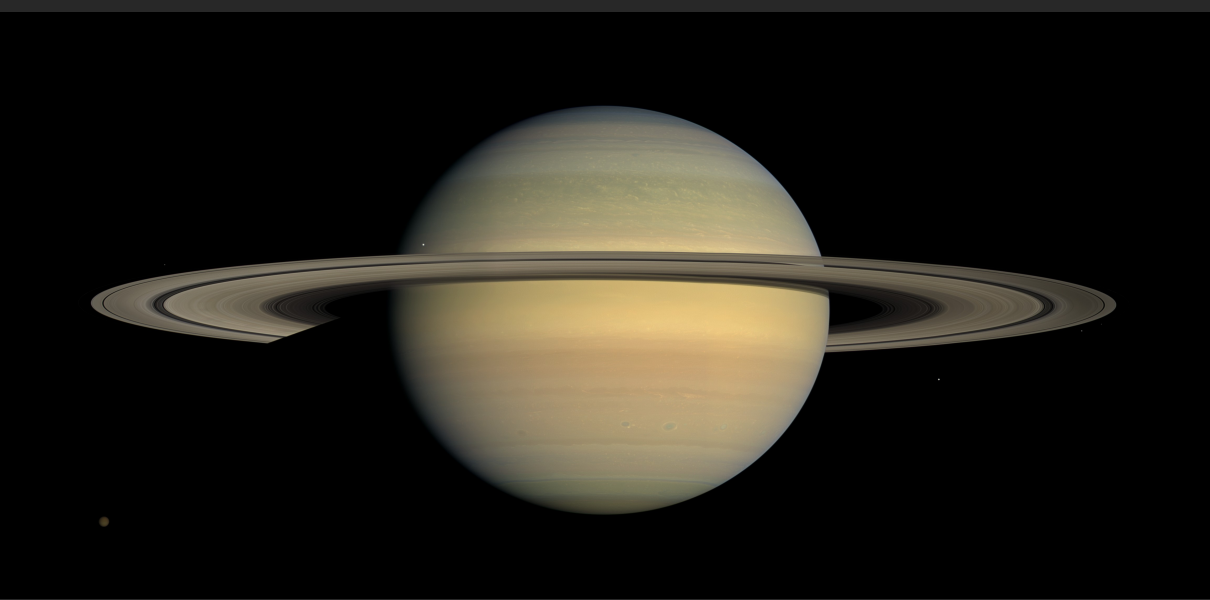


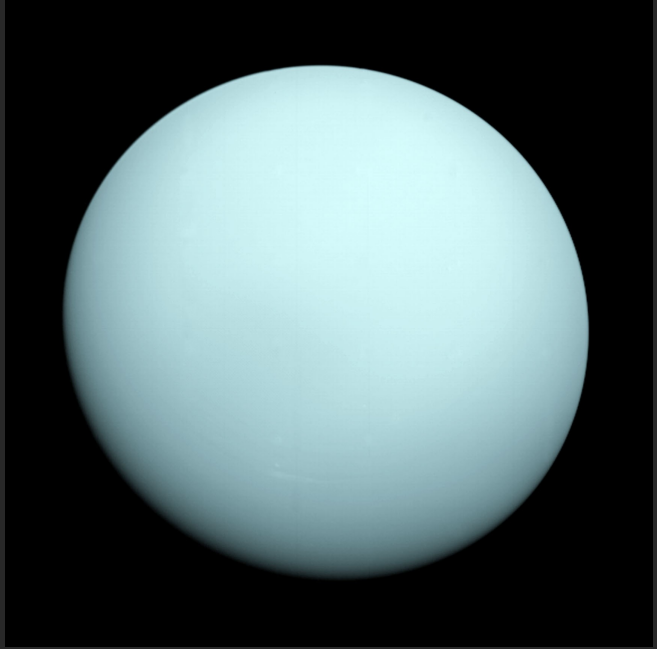


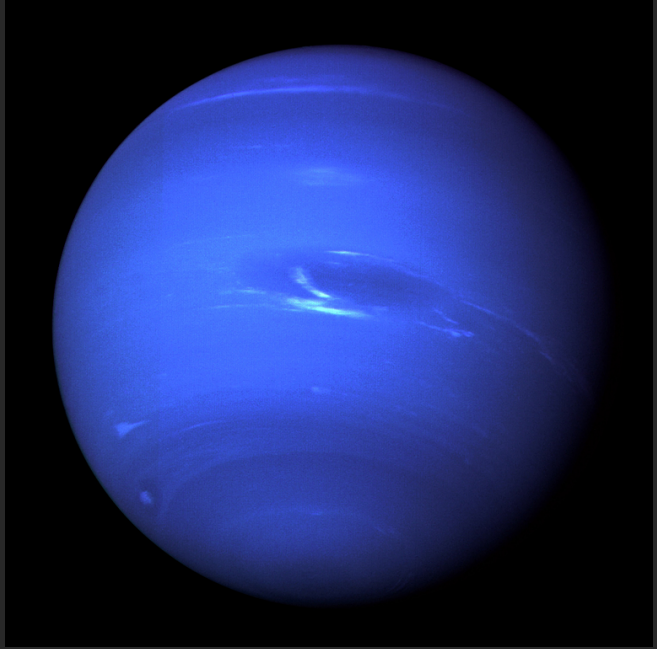
The Jovial Jovian Planets

- Jupiter, Saturn, Uranus, and Neptune
- Generally quite large:
  - 4 to 11$\times$ the diameter of Earth
  - 15 to 300$\times$ the mass of Earth
- Comprised of gas, ice, and liquid
- Orbits far from the Sun
- Each has many many "moons"



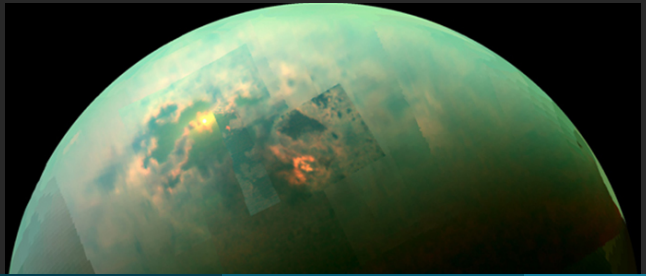






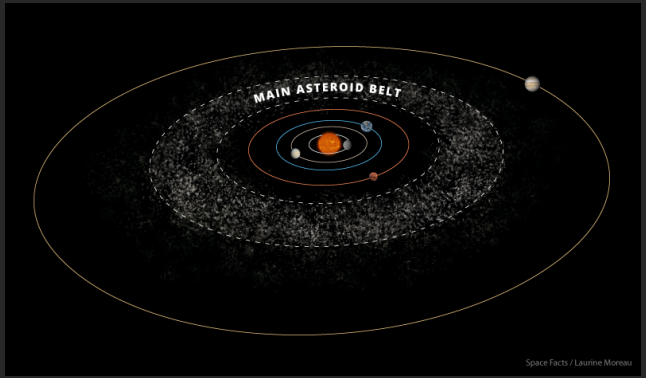
Moons

- Titan (Saturn)
  - Thick and opaque atmosphere
- Io (Jupiter)
  - Tidal heating produces volcanos
- Europa (Jupiter)
  - Smooth surface of ice (of the water type)
- Triton (Neptune)
  - Retrograde Orbit. Captured dwarf planet?



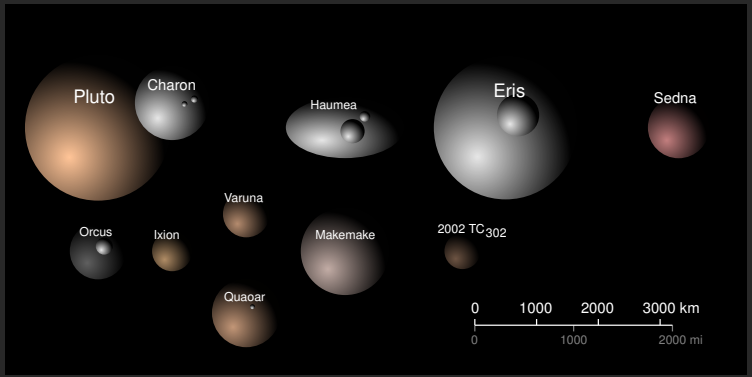
The Asteroid Belt

- Lives between the orbits of Mars and Jupiter
- Estimated to have around 2 million rocks of various sizes
- Total mass estimated to be less than the Moon's
- Largest is Ceres with a diameter of 1 km



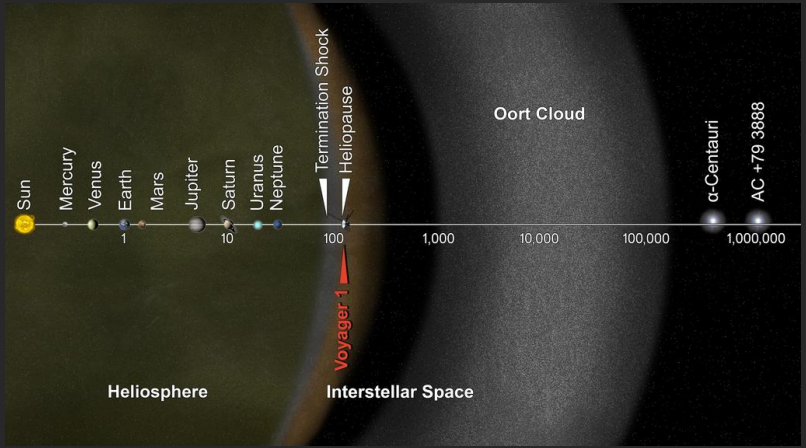
Sleepy, Dopey, and Co.

- Dwarf planets directly orbit the sun and are spherical
- Failed to "clear the neighborhood"
- 5 officially recognized but estimates are that close to 200 likely exist



Oort!

- The Oort cloud is a theoretical cloud of icy rocks far out from the solar system
- Scattered bits of rock flung out either by planet interactions or sun interactions



Test Questions?

Any questions on preparing for the test or what to expect?