













Warm-Up #6

1. What's your horoscope sign? Use the image →

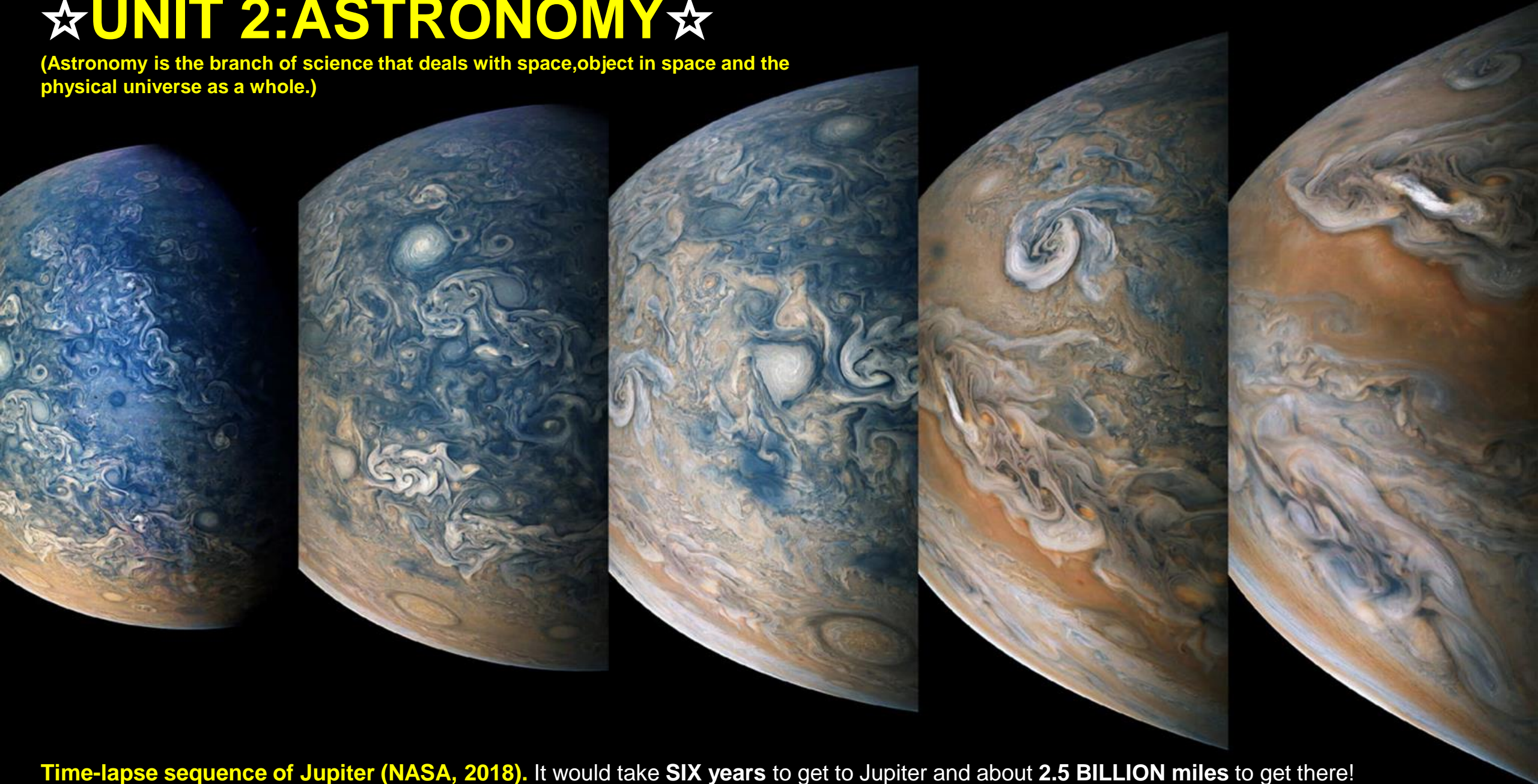
2. Do you think astrology is a type of science? If so, what kind?

3. Name the planets you know of.

Capricorn  22 Dec - 20 Jan	Aquarius  21 Jan - 19 Feb	Pisces  20 Feb - 20 Mar	Aries  21 Mar - 19 Apr
Taurus  20 Apr - 20 May	Gemini  21 May - 21 Jun	Cancer  22 Jun - 23 Jul	Leo  24 Jul - 23 Aug
Virgo  24 Aug - 22 Sept	Libra  23 Sept - 22 Oct	Scorpio  23 Oct - 22 Nov	Sagittarius  23 Nov - 20 Dec

☆UNIT 2:ASTRONOMY☆

(Astronomy is the branch of science that deals with space,object in space and the physical universe as a whole.)



Time-lapse sequence of Jupiter (NASA, 2018). It would take **SIX years** to get to Jupiter and about **2.5 BILLION miles** to get there!

Daily horoscope:



ABOUT ARIES

Aries Horoscope MAR 21 - APR 19

Looking into the mirror is not quite the same as being mirrored. Stay alert for how others reflect your energy today. A partner who gets frustrated with you may point out that you are putting too much effort into your career and not into your connection. A friend who seems to get upset out of nowhere might be doing so for reasons that seem opaque to you now but are valid to them. All these signs and signals are opportunities to strengthen your relationships. Rumi wrote, "You have to keep breaking your heart until it opens."

More for Aries:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT TAURUS

Taurus Horoscope APR 20 - MAY 20

Ideally, if you achieve balance in your daily schedule, satisfaction at work will follow. However, as soon as you implement your routine with extra passion, the pressure mounts instead of dissipates. A friend is calling your motives into question and that bothers you more deeply than you may be able to express just yet. If words escape you today, let your actions try to remedy the situation. You can bring deep healing through your presence alone.

More for Taurus:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT GEMINI

Gemini Horoscope MAY 21 - JUN 20

Play is the secret to your genius. Everything is fun until you remember you owe someone something. Luckily, you find your way right back to your source of joy fairly quickly after you get this debt sorted out. However, no sooner has that issue been cleared than a situation at work causes a dispute over shared resources. Find out who put the proverbial fish in the microwave. Your good cheer helps to diffuse the conflict and ensures that the air remains clean and fresh. No matter what the world tosses at you, never let anyone or anything dull your sparkle.

More for Gemini:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT CANCER

Cancer Horoscope JUN 21 - JUL 22

Your family nestles itself firmly somewhere between your recent growing desire to flex your creative muscles and your mental overstimulation. A current or former partner wants something from you, which prompts you to take a sober look at how you are balancing everything. If you are aggravated by their insistence, you will soon be able to offer up a valid defense of your position. Your expertise is always in finding a sideways approach when someone tries to face you head on. There are many roads to resolution and peace.

More for Cancer:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT LEO

Leo Horoscope JUL 23 - AUG 22

Your health is a gauge for your stress. You may reach a sudden stopping point when you are out and about today. If you have been pushing too hard taking care of odds and ends, you may extend yourself too far. It would be awesome to have infinite energy, but sometimes you must economize. An ambiguous situation with someone close to you puts a temporary halt to your momentum. Fight for the relationship and not against it. There is room for you both to shine.

More for Leo:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT VIRGO

Virgo Horoscope AUG 23 - SEP 22

Forging any body of work consumes resources. You can't help but worry whether you have enough to make your project succeed. Someone who seemed supportive at first appears to be wavering today. Examine your emotional and material storehouse with a fresh lens. Assess your true capacity independent of this person. This minor setback is encouraging you to discern what is truly necessary and what can fall away. Thankfully, the strength and ingenuity you need are inside you.

More for Virgo:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT LIBRA

Libra Horoscope SEP 23 - OCT 22

The question of self-worth and value is blown wide open today. You tend to define yourself against others, absorbing their talents into your repertoire without acknowledging your innate authority. Imagine not needing to measure yourself against a counterpart, real or imaginary. Family may provide an alternative, yet challenging way to triangulate your position. Begin to channel any frustration or confusion into an aesthetic expression. Art is where you always come back to yourself.

More for Libra:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT SCORPIO

Scorpio Horoscope OCT 23 - NOV 21

Your dreams are speaking volumes now. The messages they bring dominate your thoughts and how you communicate. On the instinctual level, you sense everything that happens around you. Check your immediate surroundings for anything that is blocking your ability to express what you are finding in your imaginal world. Clear the obstruction, and your dreams will not just become possible, but inevitable.

More for Scorpio:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT SAGITTARIUS

Sagittarius Horoscope NOV 22 - DEC 21

Wealth is not just measured in terms of financial resources, but also in terms of your relationships. Take the time to acknowledge all the ways others add value to your life. Show them how much they mean to you. It is important for everyone to sense equality in your connections. If you can make your appreciation tangibly evident, the faith people place in you will reward you in ways money never will. A true friend is a genuine treasure.

More for Sagittarius:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT CAPRICORN

Capricorn Horoscope DEC 22 - JAN 19

Your professional focus is sharp, and you are clipping along at an even pace. Yet, sometimes words confuse more than they clear up. As you attempt to deliver a message, be as clear and precise as possible. Someone may misinterpret you now, which could lead to a hiccup in communication. And you also might misunderstand their response. Try to keep your mind open about anything you say or hear today, without jumping to conclusions. A little patience goes a long way toward achieving your ultimate goals.



ABOUT AQUARIUS

Aquarius Horoscope JAN 20 - FEB 18

Logic can't account for the fact that letting your mind wander into far-off worlds helps to re-energize your body and revitalize your spirit. There's no need to hold back as you delve into the philosophy and wisdom of distant civilizations. Add to your library of cultural knowledge. The nuggets of truth you discover will bolster your spiritual practice and inspire altruistic pursuits. Sigmund Freud wrote, "Thought is action in rehearsal."

More for Aquarius:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)



ABOUT PISCES

Pisces Horoscope FEB 19 - MAR 20

Intimacy remains your primary concern as you navigate the space between you and another. A friend might issue a stern warning today, or a lover may suddenly go cold. You must decide whether others are being fair or not. Thankfully, any cloud of self-doubt or confusion their rebuke produces will evaporate quickly this time around. Uncertainty may slip under your radar, but it is not entirely gone. Focus on strengthening the bond with your special person, for that is where your heart is happiest now. Singer Roger Miller said, "Some people feel the rain; others just get wet."

More for Pisces:

[WEEKLY LOVE](#), [MONTHLY FORECAST](#)

Disclaimer:

Astrology is NOT science !!!

There is currently no evidence that star positions affect human behavior or your future.

Go ahead & read your **horoscope** but remember that it is *just entertainment!*

Astrology is **PSEUDOSCIENCE!**





Astronomy

Study of objects in space (celestial bodies) such as the Sun, stars, planets, comets, gas, & galaxies.

*Also, the Earth's place in the universe.



Universe = everything that exists

Geo-
centric

Earth-centered
view of universe

C. Ptolemy

90-168

Helio-
centric

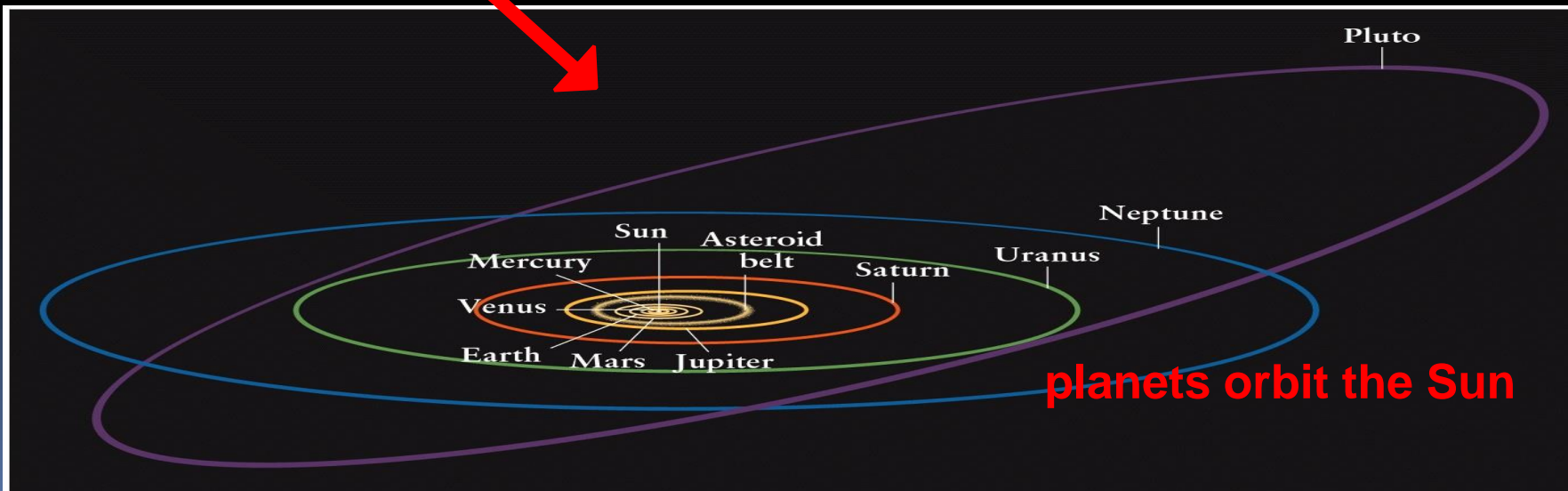
Sun-centered
view of solar system

N. Copernicus

1473-1543

“the Sun” is a star

modern view of the solar system



Cosmic Size and Distance




Galaxies = groups of BILLIONS of stars

there are more than **100 billion galaxies**

they all have different shapes





How big are YOU compared to the
Universe?

THE SCALE OF THE UNIVERSE


Visit

<http://htwins.net/scale/>

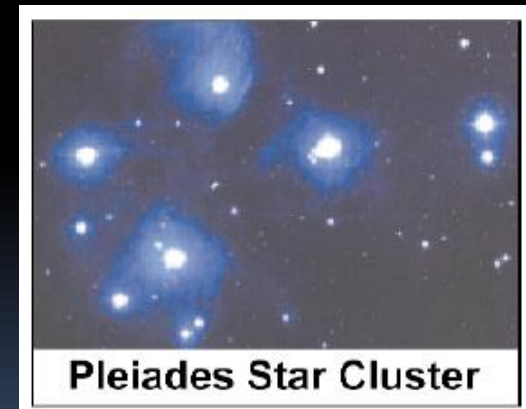
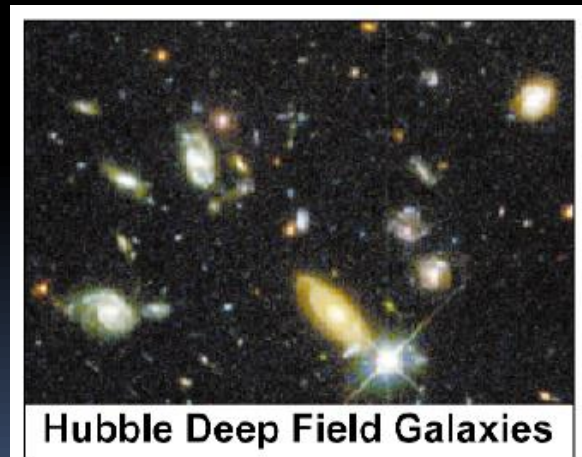
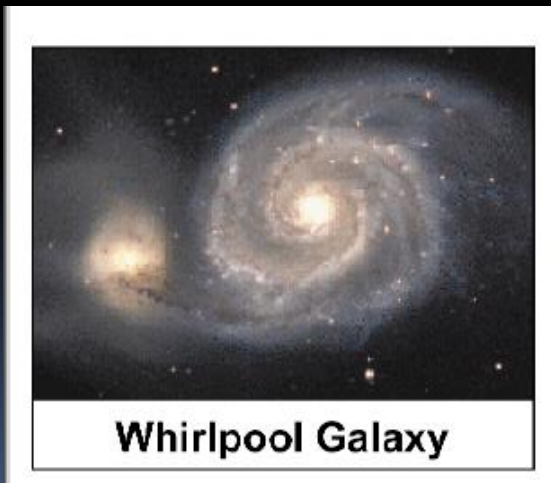
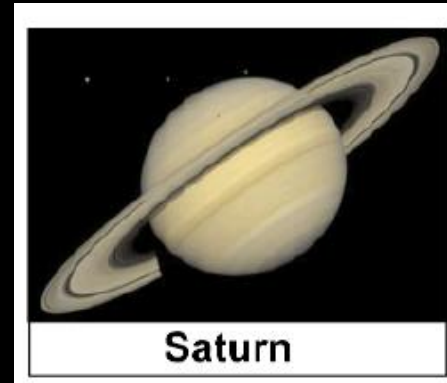
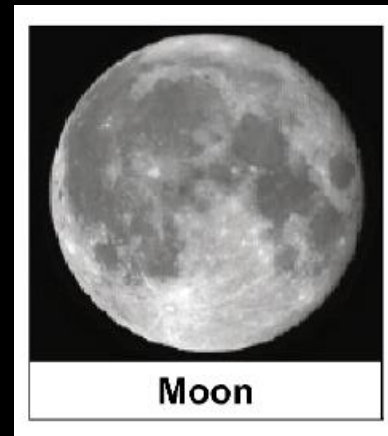
Take five minutes to view this
online!



Think-**Pair-Share**: Cosmic sizes?

- With a partner, predict the relative sizes of the seven images shown (from smallest → biggest)
 - ALSO, which do you think are closest to Earth and which do you think are farthest from Earth?
- 

Cosmic Size and Distance



Cosmic Size and Distance

Question 1: How Big?

The correct order for the 7 images, from smallest to largest is:

Telescope	40 feet long	(12 meters)
Moon	2 thousand miles diameter	(3,200 kilometers)
Saturn	75 thousand miles diameter	(121,000 kilometers)
Sun	875 thousand miles diameter	(1,408,000 kilometers)
Pleiades	60 trillion miles across the cluster	(1 x 10 ¹⁴ kilometers)
Galaxy	600 thousand trillion miles across	(1 x 10 ¹⁸ kilometers)
Hubble galaxies	600 million trillion miles across the cluster	(1 x 10 ²¹ kilometers)

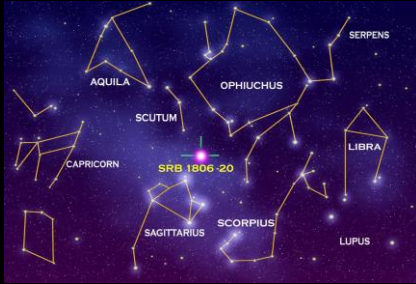
Cosmic Size and Distance

Question 2: How Far?

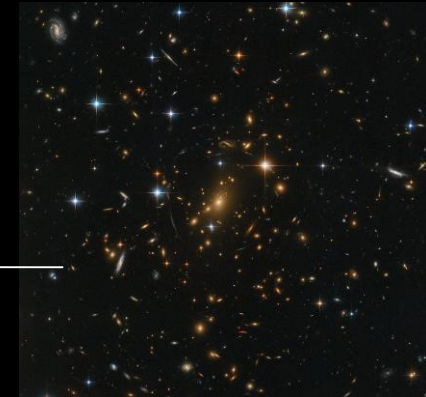
The correct order for the seven images, from closest to Earth to farthest, is:

Telescope	350 miles above surface of Earth	(560 kilometers)
Moon	250 thousand miles	(402,000 kilometers)
Sun	93 million miles	(1.5×10^8 kilometers)
Saturn	120 million miles (at its closest)	(1.3×10^9 kilometers)
Pleiades	2,400 trillion miles	(4×10^{15} kilometers)
Galaxy	200 million trillion miles	(3×10^{20} kilometers)
Hubble galaxies	30 billion trillion miles	(5×10^{22} kilometers)

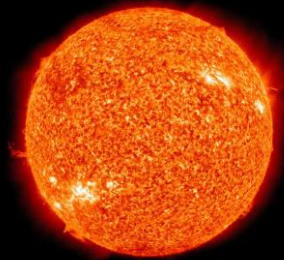
Write these down in order from smallest to biggest.
What are your predictions?



clusters & constellations



universe



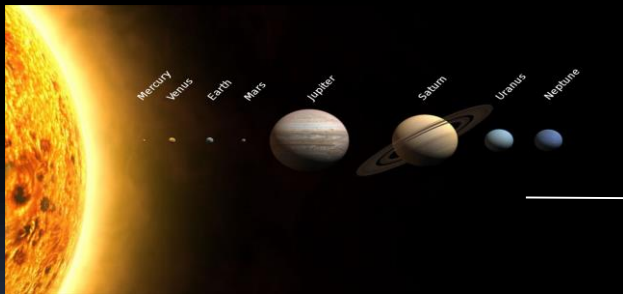
stars

asteroids, meteors, meteorites

The Four Largest Asteroids



solar systems



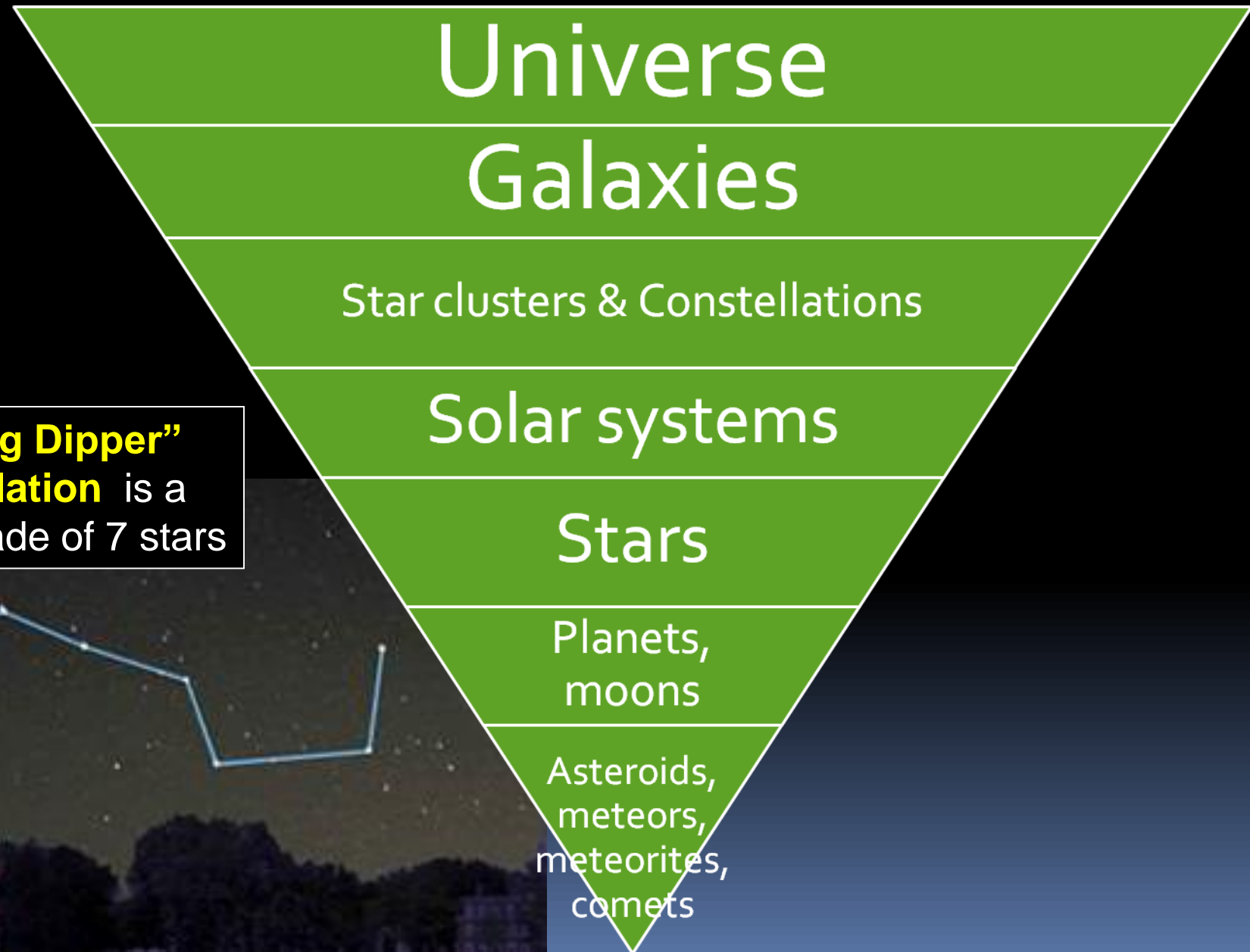
galaxies



planets - moons



Cosmic Size (large → small)



The **“Big Dipper” constellation** is a pattern made of 7 stars



Solar System NASA WebQuest: (30 mins)

- Grab a chromebook! If you don't have one, buddy up with someone who does have one. (Only 2 people per chromebook!)
- Fill out the ENTIRE worksheet before the end of class--I will be collecting this at the end.
- <https://eyes.jpl.nasa.gov/eyes-on-the-solar-system.html>

Closure: MIND=BLOWN.

