* DISTANCES TO THE STARS
  + Stars are by vast .
  + Astronomers use units years to measure the of stars
  + A light-year is the travels in a vacuum or approximately kilometers or miles.
  + Proxima Centauri is the star to the .
* PROPERTIES OF STARS
  + Astronomers by their , , and . Other properties of stars are and .
  + Color and Temperature – a stars’ indicates the of its’ .
  + The stars appear
  + The stars appear
  + The of color in a star is from to .
* BRIGHTNESS
  + The of a star as Earth is dependent on many factors such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Apparent Brightness – is the brightness of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + The apparent brightness \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as its distance from you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Absolute Brightness – is how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The absolute brightness is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ star and is not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from Earth.
* COMPOSITION
  + Each star has its own \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Most stars have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that is similar to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ together making up to 96 to 99.9 % of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* HOW STARS FORM
  + A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a large \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ spread out over a large volume of space.
  + Some nebulas \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lit from within by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + A star is formed when a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ becomes so dense and hot that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begins.
* The Life Cycle of Stars
  + Regular Stars
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Cycle for Massive Stars
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* LIFE CYCLES OF STARS
  + Adult Stars – A star’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_determines the star’s place on the and stay.
  + The amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ available when a determines the \_\_\_\_\_\_\_\_\_\_\_\_\_\_of each young star.
  + The the star, the \_\_\_\_\_\_\_\_\_\_\_\_\_ energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Since blue stars \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, they use up their fuel \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ quickly and are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lived\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* THE DEATH OF A STAR
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ supply of \_\_\_\_\_\_\_\_\_\_\_\_\_ in a star’s leads to the star’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ star, or a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* GROUPS OF STARS
  + Astronomers have determined that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of all stars are members of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + There are three basic kinds of star clusters: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Astronomers classify into main types: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_ \_ and .
* EXPANDING UNIVERSE
  + The observed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the spectra of shows that the universe is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Astronomers that the came into being in an event called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Dark can only be detected by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_effect on matter.
* Explaining the H-R Diagram
  + “H” =
  + “R” =
  + graph of and of all stars
* Star Phases: Charted on H-R Diagram
  + The H-R Diagram shows the between , , , and effective of stars.
  + The H-R Diagram can be used to different of stars.
  + It can also be used by to measure how a star is from the .
* Explaining the H-R Diagram
  + Temperature: (bottom) axis.
    - at left
    - toward right
  + Brightness: (left side) axis.
    - stars near top
    - stars near bottom
  + A star’s on the diagram will as it moves from its “ ” to its “ ”.
* How do the Sun, Moon, and Earth interact to create different observable features from the Earth?
  + Seasons
    - The occur because of Earth’s causes each to towards the , from the sun, or both .
    - Notice how the is always in the same . As the Earth , the part of Earth toward the changes.
    - During what seasons is the North Pole \_\_\_\_\_\_\_\_\_\_\_\_ towards the sun? Why?
    - During what seasons it the North Pole pointing from the sun? Explain.
  + Tides
    - How do change from tide to tide?
      * Two big of on the Earth:
        + one under the
        + another on the side
        + As the Earth , the follow the moon.
  + Gravitational Effect of the Sun
    - Neap Tides
      * , , and form \_\_\_\_\_\_\_\_\_\_ angles
      * High Tides are and Low Tides are than normal
    - Spring Tides
      * , \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are lined up
      * High Tides are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Low Tides are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than normal
  + Eclipses
    - Solar Eclipse
      * A eclipse occurs when the passes between the & the
        + Umbra – Area where from the Sun is
        + Penumbra – Area where light is
        + Draw the picture & Label it:
      * A solar eclipse happens when the & perfectly .
        + It is only on Earth from the
      * A solar eclipse happens when the Moon & Sun don’t align.
        + It is on Earth from the
    - Lunar Eclipse
      * A Lunar occurs when the inside of shadow
        + Draw the picture & Label it:
    - Phases of the Moon
      * Crescent moon
        + The Moon is shaped when the portion of the moon looks and .
      * Gibbous moon
        + The Moon is shaped when the portion of the moon is more than and on .
      * Quarter moon
        + Even though the Moon  full, it is a quarter moon because you only see of the Moon.

A 1st Quarter Moon is when the side of the Moon is .

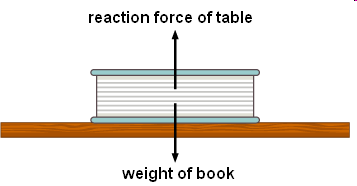
A 3rd Quarter Moon is when the side of the Moon is lit.

* + - * Full moon
        + It is a Full Moon when of the Moon is illuminated
      * New moon
        + It is a New Moon when the Moon illuminated by the sun.
      * Waning & Waxing
        + The Moon is when the side of the Moon is lit
        + Waning is when the Moon appears to
        + The Moon is when the side of the Moon is lit
        + Waxing is when the Moon appears to
* Force
  + A force is a or a that one object on another object.
    - More than force can act on an object at once.
  + The *force* acting on an object is the of all the individual acting on the .
    - Net force changes an object’s .
  + The Fundamental Forces in Nature
    - These forces act at a distance
      * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      * Strong Force (binds and in the nucleus of the
      * Weak Force - that underlies some forms of and certain between particles.
        + All forces in the world can be to these four .
    - Contact Forces
      * *Contact Forces* are forces in which objects are with each other.
        + Examples of contact forces are:

*Friction Force* – force that materials that as they past each other.

*Air resistance Force* – Acts upon objects as they the air.

*Applied Force* – Force that is to an object by another or by a .

* + - Friction Force
      * The *friction force* is the force by a as an object across it, or to move across it.
      * Most of the time, the friction force the motion of an object.
    - Tension Force
      * The *tension force* is the force which is through a , , or when it is tight by forces acting from opposite ends.
      * The tension force is along the of the wire on the objects on the ends of the wire.
    - Applied Force
      * An *applied force* is a force which is to an object by a or another .
    - Air Resistance Force
      * The *air resistance* force is a type of force Which acts upon objects as they through the
      * The force of air is often observed to the of an object. It is most for objects which travel at speeds or for objects with surface areas.
    - Normal Force
      * The normal force is the force exerted upon an object which is in contact with object.
    - Gravity Force
      * The force of gravity acts over a .
      * The force of gravity if the force with which the earth, moon or other massively large objects another object toward
    - By definition, this is the of the object. The force of gravity on earth is to the of the object as found in the equation
    - Balanced Forces
      * When the forces on an object are in directions and in size, the forces are said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*.*
        + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forces are balanced.
        + Forces are common represented in as . The arrows are called because they have both and .
      * 
        + The table pushes on the book
        + Gravity the book

The forces acting on the book . They in size but are acting in directions.

The book is moving.

Net force = .

* + - *Unbalanced forces* (also called Net Forces) forces acting on an object. During the competition, one team is finally able to overcome and apply pulling force to the rope.  The rope starts to move in that teams favor.
    - *Motion* can only when an force (net force) acts on an .