Science F: Week 4 Activity Sheet

Eyewitness: Universe

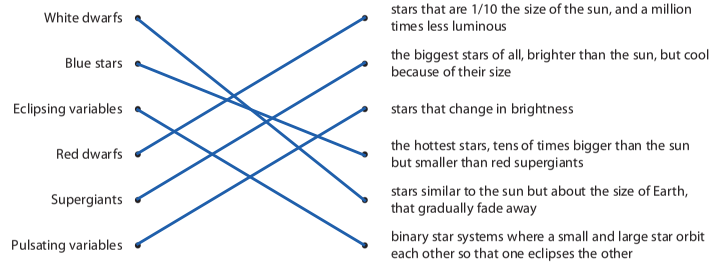
1. Fill in the blanks (not all of the words will be used): (pp. 42-43)

medium	**huge**	**binaries**	**Earth**
sun	**200 billion**	**2,500**	**multiples**

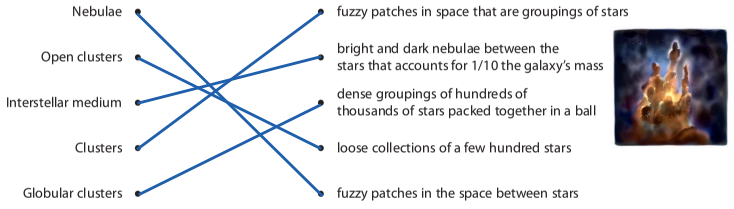
Our galaxy holds around _(200 billion)_ stars in our galaxy. About half of them are formed in pairs, called _(binaries)_ or larger groups called _(multiples)_ but are often so close together or so far from Earth that they look like single stars. They appear to be tiny, but they are _(huge)_ bodies like the _(sun)_.

2. Circle **True** or **False** : Each star has a different size, brightness, mass, and color. (pp. 44-45)

3. Match the term to the correct description: (pp. 44-45)



4. Match the term to the correct description: (pp. 46-47)



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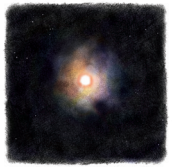
5. Number the order in which stars are developed: (pp. 48-49)



_(3)_ Gravity makes a core collapse on itself
_(5)_ At a temperature of 18 million degrees F, it becomes a new star
_(1)_ Giant gas clouds occupy interstellar space
_(4)_ The core becomes hotter and more compressed
_(2)_ Gravity pulls gas molecules together to make dense clumps and cores

6. Fill in the blanks (not all of the words will be used): (pp. 48-49)

the moon	**metal**	**Jupiter**
gas	**oceans**	**the sun**
Earth	**liquid**	**Mercury**

Exoplanets can range from gas giants the size of _(Jupiter)_ to rocky planets much larger than _(Earth)_, to tiny worlds smaller than _(Mercury)_. Some are hot enough to boil _(metal)_ while others are covered in deep _(oceans)_, and others produce cometlike tails of _(gas)_.

7. Label the stages of star death for average stars: (pp. 50-51)

A. When the helium in a red giant's core runs out, the escaping gas creates a planetary nebula.
B. Here, the star's core collapses into an incredibly dense, hot star called a white dwarf.
C. Stars like the sun burn fuel slowly and can shine for 10 billion years.
D. When the hydrogen in its core is used up, the star's atmosphere balloons outward, and it becomes a red giant.

_(C)_ _(D)_ _(A)_ _(B)_

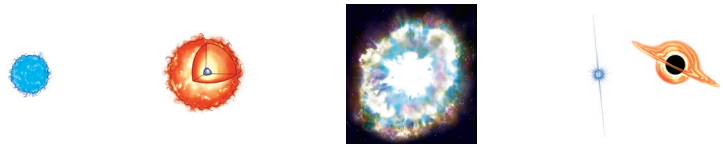
8. Label the stages of star death for stars larger than the sun: (p. 50-51)

   A. Nuclear reactions in the core cause atoms to fuse and form heavier elements (sodium, carbon, oxygen) until iron is produced. The core gets so hot that the star balloons into a supergiant.

   B. A compressed remnant of the core becomes a neutron star, or a black hole.

   C. Stars bigger than the sun have hotter, denser cores that burn hydrogen more quickly and shine only a few million years.

   D. Iron rapidly builds up in the core, and the core can no longer generate enough outward pressure to balance gravity's crushing force, causing the star to collapse. This results in a supernova explosion.



(C) (A) (D) (B)

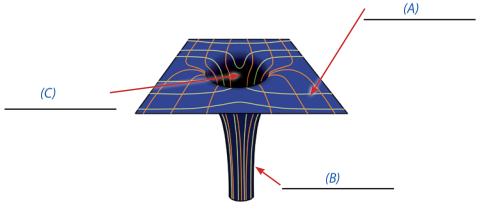
9. Circle **True** or **False**: The enormous gravity of a black hole pulls in nearby matter, only letting light escape. (pp. 52-53)

10. On the diagram below, label what happens to the light ray paths (the yellow and orange lines) when they come near a black hole: (pp. 52-53)

    A: Light rays that stray too close are sucked in (spiraling down)

    B: Black hole forms a bottomless gravitational well that light cannot escape (continuing to spiral downward as gravity grows stronger)

    C. Light rays at the top pass close to the black hole (bent inward)



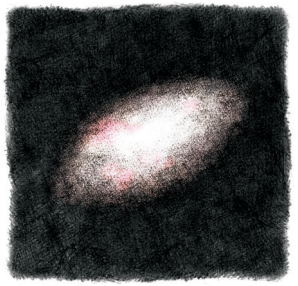
11. Fill in the blanks (not all of the words will be used): (pp. 54-55)

exoplanets	**Milky Way**	**May**
spiral	**miles**	**June**
solar system	**August**	**constellations**
light-years	**September**	**circle**

A band of light that arches across a clear night sky, running through many known _(constellations)_, is called the _(Milky Way)_. Our solar system is about 26,000 _(light-years)_ from the Milky Way. From Earth, it looks like a band but is really a _(spiral)_. We can see its brightest areas between the months of _(June)_ and _(September)_.

12. Match the term to its correct definition: (pp. 56-57)

Small Magellanic Cloud	Larger group of at least 80 galactic neighbors that includes the Large Magellanic Cloud, Small Magellanic Cloud, and the Milky Way
Local Group	Irregular galaxy about 1/3 the size of the Milky Way, containing similar stars and gas to our own galaxy
Large Magellanic Cloud	Irregular galaxy about ¼ the size of the Large Magellanic Cloud



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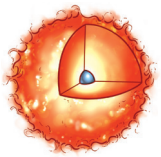
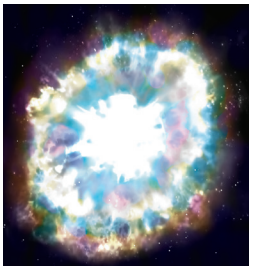
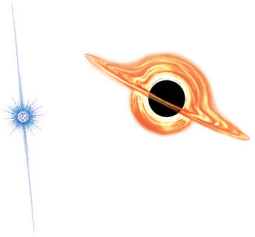

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