Red Giant

I. Physical Characteristics

1. **Define the term red giant.**

Red Giant - dying low-mass star in the later stages of stellar evolution

2. **Red giants are typically** 20 **X -** 100 **X the size of the Sun.**

3. **What causes the expansion of a Low-Mass Main Sequence Star to become a Red Giant?**

- After the hydrogen fuel of a star is used up the star starts consuming helium (Core contracts as outer shell expands)

4. **What is the average temperature of a Red Giant?**

5,000 kelvin (or lower)

How does that temperature compare to the star as a Low-Mass Main Sequence Star?

- Much lower due to a lack of hydrogen

5. **How does the luminosity (brightness) of a Red Giant compare to a Main Sequence Star?**

Several hundred times brighter than the Sun

II. Examples of Red Giants

1. **List the constellations in which the following Red Giants can be located.**

1. Albireo : Cygnus (The Swan)
2. Aldebaran : Taurus (The Bull)
3. Arcturus : Boötes (The Herdsman)
4. Gamma Crucis : Crux (The Cross)
5. Mira : Cetus (The Whale)
6. Pollux : Gemini (The Twins)

III. Existence & Fate of Red Giants

1. How long do Red Giant star typically exist?

10 million years

2. Most Red Giant stars are actually orange in color.

Circle One : (True) False

3. What are the two closest giant stars to the Sun?

Name	Light Years Away	Constellation
Orange Giant	36 l.y.	Arcturus
Red Giant	88 ly.	Gamma Crucis

4. When does a Low-Mass Main Sequence Star develop into a Red Giant?

- When hydrogen fuel ceases to exist

5. What causes Low-Mass Main Sequence Stars to expand into Red Giants?

- Contraction of the core (No balance!)

6. How long will it take for the Sun to develop into a Red Giant?

5 billion years (Hopefully!) ☺

7. Which planets will consumed by the Sun as a Red Giant?

Mercury, Venus, likely Earth

8. What will eventually happened to a Red Giant star?

- Shed outer layers after helium is used up
(Becomes a Planetary Nebula)

9. There is potential that the Sun has enough mass to become a Supergiant Star.

Circle One : True (False)