7th grade

Name _____ Date _____ Block _____

Twinkle, Twinkle, Little Star Lab

Directions:

- Examine the star circles your teacher gives you. Each circle has the following information.
  - **Star name** – the common or catalog name of the star
  - **Temperature** – the temperature of the surface of the star
  - **Color** – the color of a star indicates the temperature of the star.
  - **Brightness** – the number of times brighter the star is than our sun (a fraction means it is dimmer than our sun)
  - **Expected lifetime** –the number of years stars of this type are expected to exist at this color and brightness
- Sort the star circles by temperature.
- Using the graph on the next page, plot the stars on the graph. Use a red pencil for a red star, blue pencil for a blue star and so on.
- Study the graph for trends & then answer the following questions:

a) Describe the general trend between temperature and brightness.

_____

_____

b) What is the color and brightness of the most abundant stars? The rarest stars?

_____

_____

c) What are the characteristics of the stars that do not conform to the graph's trend?

_____

_____

d) In terms of the graph's trend, is our sun typical or exceptional? _____

e) In the stars that fit the general trend (these are often called **main sequence** stars), what relationship do you notice between color and expected lifetime?

_____

_____

_____

Read the two articles that were passed out and do a GIST summary on each. (See attached.) Answer the questions at the end of each article on this paper.

Article: **What Is a Star? Q's**

1. What did our sun look like before it became a star?

   _____

2. Why can nuclear fusion occur in the core of a star?

   _____

3. What do color and brightness indicate about a star?

   _____

4. What is the most common type of star? Why?

   _____

   _____

ARTICLE: What Determines Habitable Zones Around Stars? Q's

1. The sun's habitable zone is sometimes likened to the story in which Goldilocks says the porridge is too hot, too cold, and just right. Which planets fit this Goldilocks analogy?

   _____

   _____

2. Why can a star have several different habitable zones?

_____

_____

3. What kinds of stars have either no habitable zones or very inferior ones?

_____

_____

f) Why might stars of one color be much more abundant than stars of another color?

_____

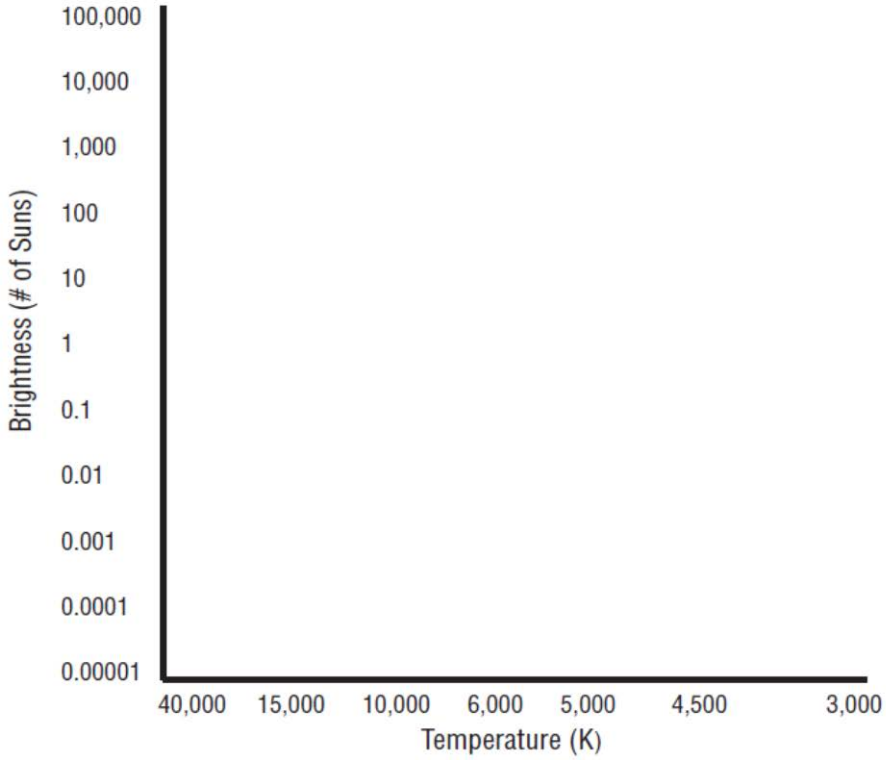
_____

g) Which type(s) of star should we consider first when looking for stars that might have life-supporting worlds around them? Why?

_____

_____

_____


Brightness (# of Suns)
100,000
10,000
1,000
100
10
1
0.1
0.01
0.001
0.0001
0.00001
40,000
15,000
10,000
6,000
5,000
4,500
3,000
Temperature (K)