

# Worksheet: Classifying Stars by Brightness and Temperature



**Q1:** An astronomer looks at the light coming from two stars: star A and star B. Star B is emitting bluer light than star A. Which star is hotter?

- A Star A
- B Star B



Question Video

**Q2:** The table shows the absolute magnitudes of several nearby stars.

Star	Gliese 687	Epsilon Eridani	Ross 614	Procyon A
Absolute Magnitude	10.9	6.2	16.2	2.7



Question Video

► Which star is the brightest?

- A Procyon A
- B Gliese 687
- C Epsilon Eridani
- D Ross 614

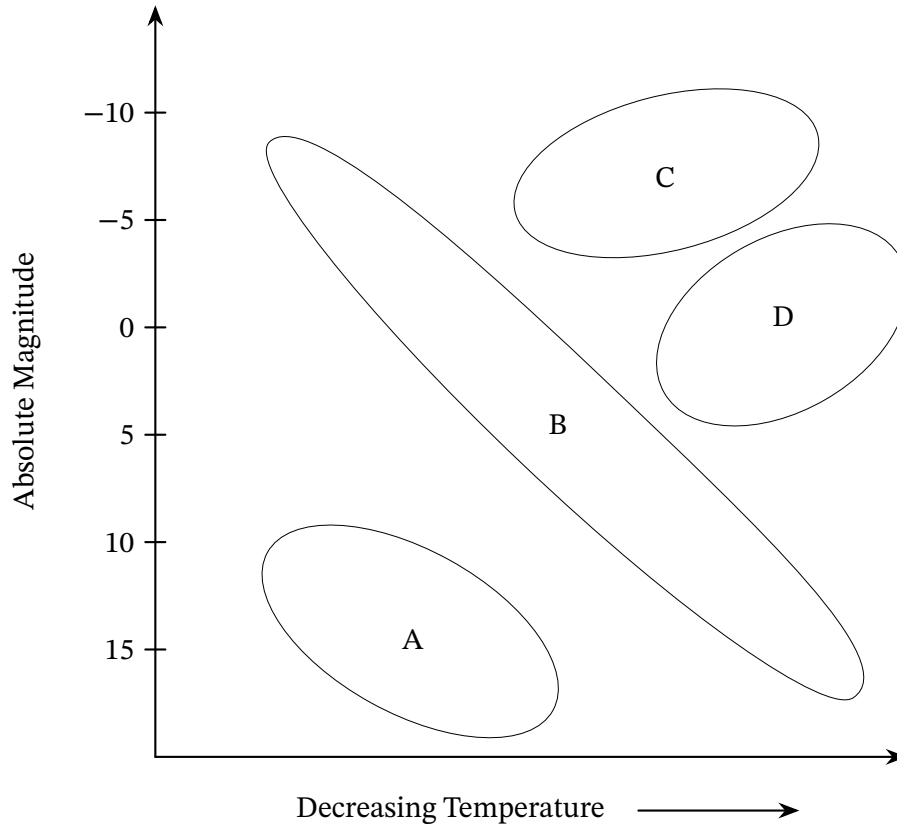
► Which star is the dimmest?

- A Ross 614
- B Epsilon Eridani
- C Gliese 687
- D Procyon A

**Q3:** The lower the value of the absolute magnitude of a star, the \_\_\_ that star is. The higher the value of the absolute magnitude of a star, the \_\_\_ that star is.

- A dimmer, brighter
- B further, closer
- C dimmer, cooler
- D brighter, hotter
- E brighter, dimmer

**Q4:** The diagram shows the axes for a Hertzsprung-Russell diagram and four regions within the diagram.



► What types of stars are found in region A?

- A Main sequence stars
- B White dwarfs
- C Red giants
- D Red supergiants
- E Black holes

► What types of stars are found in region B?

- A White dwarfs
- B Main sequence stars
- C Red giants
- D Red supergiants
- E Neutron stars

► What type of stars are found in region D?

- A White dwarfs
- B Red giants
- C Main sequence stars
- D Neutron stars
- E Black dwarfs

**Q5:** The table shows the colors and absolute magnitudes of some nearby stars.

Star	Absolute Magnitude	Color
Proxima Centauri	15.5	Orange
Sirius A	1.4	Blue
Procyon B	13.0	Yellow
Gliese 832	10.2	Red

▶ Which star is the hottest?

A Procyon B

B Gliese 832

C Sirius A

D Proxima Centauri

▶ Which star is the coolest?

A Proxima Centauri

B Sirius A

C Gliese 832

D Procyon B

▶ Which star is the brightest?

A Procyon B

B Gliese 832

C Sirius A

D Proxima Centauri

► Which star is the dimmest?

A Procyon B

B Gliese 832

C Proxima Centauri

D Sirius A

**Q6:** The higher the surface temperature of a star is, the \_\_\_ the light coming from it. The lower the surface temperature of a star is, the \_\_\_ the light coming from it.

A bluer, redder

B bluer, bluer

C redder, bluer

D greener, bluer

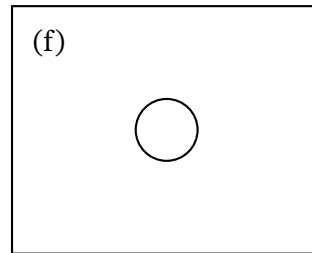
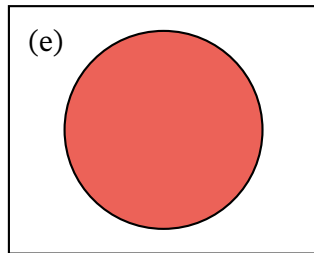
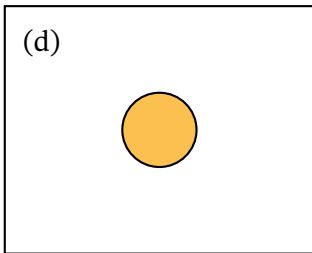
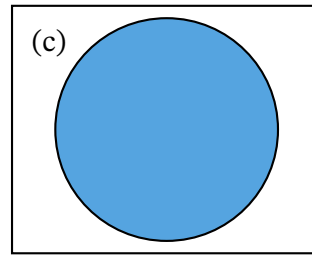
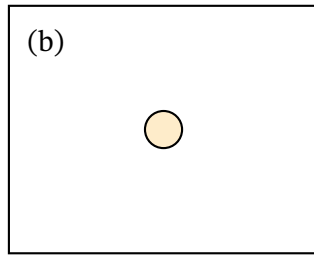
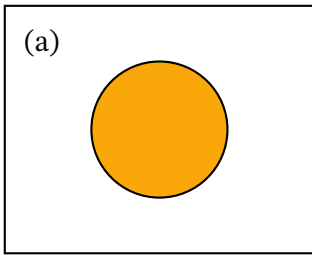
E redder, greener

**Q7:** Star A has an absolute magnitude of 13.1 and Star B has an absolute magnitude of 2.8. Which star is brighter?

A Star A

B Star B

**Q8:** The diagram shows six stars. Each star is colored approximately according to the light that it emits. List the stars in order from lowest to highest temperature.

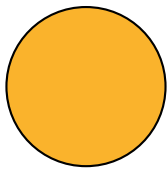


- A (e), (a), (d), (b), (c), (f)
- B (f), (e), (a), (d), (b), (c)
- C (c), (e), (a), (d), (b), (f)
- D (e), (a), (b), (d), (f), (c)
- E (e), (a), (d), (b), (f), (c)

**Q9:** The diagram shows six stars. Each star is colored approximately according to the light that it emits.



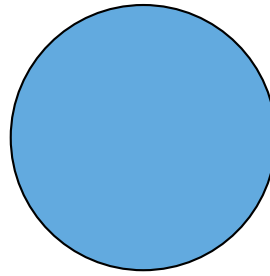
Question Video



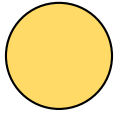
(a)



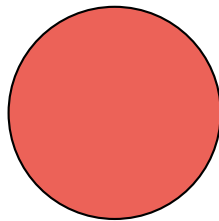
(b)



(c)



(d)



(e)



(f)

► Which star is the hottest?

A (f)

B (a)

C (d)

D (b)

E (c)



► Which star is the coolest?

A (b)

B (a)

C (d)

D (f)

E (e)

► Which star emits light that is most similar to the Sun?

A (c)

B (a)

C (d)

D (b)

E (f)

**Q10:** Two stars, *A* and *B*, are known to have the same brightness. When observed by an astronomer on Earth, however, star *B* appears brighter than star *A*. Which star is farther away from Earth?

A Star *A*

B Star *B*