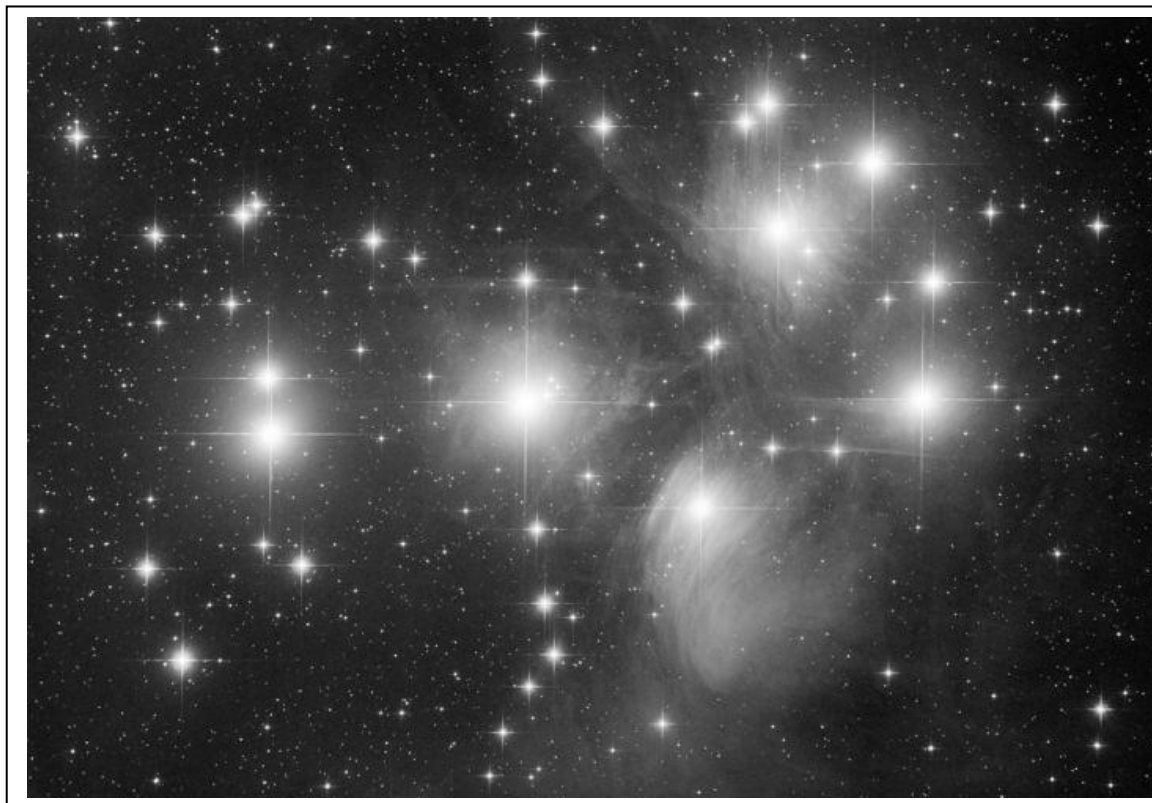


This is the Pleiades star cluster. From resources at your library or the Internet, fill-in the following information:

- 1) Type of cluster -----
  - 2) Alternate Names -----
  - 3) Distance in light-years -----
  - 4) Right Ascension -----
  - 5) Constellation -----
  - 6) Diameter in light years -----
  - 7) Diameter in arcminutes -----
  - 8) Apparent visual magnitude -----
  - 9) How old is the star cluster? -----
  - 10) What kinds of stars can you find in the cluster? -----
  - 11) What are some of the names of the stars? -----
- Number of stars -----  
Declination-----

From the photograph below, and the cluster's diameter light years, answer these questions:

- 12) How many stars are probably members of the cluster? -----
- 13) What is the average distance between the brightest stars? -----
- 14) What is the typical distance between the stars you counted in question 12? -----
- 15) Why do the stars have spikes? -----
- 16) Describe in 500 words why this star cluster is so interesting.



- 1) Type of cluster ----- **Open, Galactic Cluster**    Number of stars -----**500**
- 2) Alternate Names ----- **Seven Sisters; Messier-45**
- 3) Distance in light-years ----- **425 light years.**
- 4) Right Ascension ----- **3h 47m**                      Declination----- **+24d 00'**
- 5) Constellation ----- **Taurus**
- 6) Diameter in light years ----- **About 12 light years.**
- 7) Diameter in arcminutes ----- **110' or about 3 times the diameter of the full moon!**
- 8) Apparent visual magnitude ----- **Between +5 and +6.**
- 9) How old is the star cluster? ----- **About 100 million years.**
- 10) What kinds of stars can you find in the cluster? – **Mostly type-B main sequence**
- 11) What are some of the names of the stars? **Pleione, Atlas, Merope, Alcyone, Electra, Maia, Asterope, Taygeta, Celeano.**

From the photograph below, and the cluster's diameter light years, the size of the cluster is about 120 mm which equals 12 light years for a scale of 10 millimeters to one light year.

- 12) How many stars in the photo are probably members of the cluster?  
 Students should notice that there is a distinct gap between the bright stars and the faint stars in the photo. The faint stars are mostly background stars in the Milky Way unrelated to the cluster. By squinting at the photo, students should be able to find about 100-120 stars.
- 13) What is the average distance between the brightest stars? ----- The seven bright stars are about 25 mm or 2.5 light years apart.
- 14) What is the typical distance between the stars you counted in question 12? – With a millimeter ruler, students can measure the spaces between a few dozen stars in the picture and find an average, or they can squint at the picture and use their ruler to estimate the answer. Answers between 5 and 10 mm are acceptable and equal 0.5 to 1 light year.
- 15) Why do the stars have spikes? -- Students may need to investigate this question by using books or the web. Generally, reflecting telescopes produce stellar spikes because the secondary mirror diffracts some of the starlight. The spikes are the four 'legs' used to support the smaller mirror inside the telescope. Refractors do not have spikes and produce round images. In no case do the round images suggest that the star is actually being resolved.
- 16) Describe in 500 words why this star cluster is so interesting.

Students will find many items on the web to form the basis for their essay including: The Pleiades cluster has a long history in mythology. There are many names for this cluster throughout many civilizations and languages. Astronomically, it is the closest open cluster to the sun. It is very young, and contains many stars that are 100 to 1000 times more luminous than the sun. This cluster will eventually fade away in about 250 million years as its brightest stars evolve and die. The cluster still contains the gas left over from its formation, which can be seen as the nebula surrounding the six brightest stars.