

Name: \_\_\_\_\_

Answer Sheet for the CLEA Lab  
**Photoelectric Photometry of the Pleiades**

**Part I: Understanding the Photometer**

Earth rotates to the (East or West) \_\_\_\_\_

The stars drift to the (East or West) \_\_\_\_\_

**Part II: Calibrating the Photometer - Sky Readings**

Filter	Raw Counts 1	Raw Counts 2	Raw Counts 3	Raw Counts 4	Raw Counts 5	Mean Sky (counts/sec)
B						
V						

**Part III: Photoelectric Photometry of the Pleiades Data Sheet**

Integration Time = 10 seconds

Number of Integrations = 5

Star #	Object Name	RA hr min sec	DEC deg min sec	B	V	B - V
1	N2230-01442	03 41 18.0	23 58 00.0			
2	N2230-00478	03 42 55.1	24 29 35.7			
3	N2230-00526	03 44 06.6	24 20 11.8			
4	N2230-00306	03 45 06.5	24 15 49.5			
5	N2230-01585	03 42 12.5	24 28 01.9			
6	N2230-00156	03 45 40.2	24 37 38.8			
7	N2230-01554	03 45 42.4	25 03 26.2			

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8	N2230-00319	03 45 43.2	24 16 12.7			
9	N2230-00990	03 45 48.4	24 52 42.6			
10	N2230-01908	03 46 27.3	24 15 18.1			
11	N2230-02089	03 46 27.8	23 35 34.6			
12	N2230-01621	03 46 34.2	23 31 27.2			
13	N2230-01627	03 46 50.5	23 14 21.8			
14	N2230-02081	03 46 59.4	24 31 12.2			
15	N2230-01820	03 47 01.4	24 22 23.7			
16	N2230-02202	03 47 29.1	24 06 18.5			
17	N2230-02192	03 47 36.9	23 36 33.9			
18	N2230-02091	03 47 50.8	24 40 44.9			
19	N2230-02449	03 48 13.4	25 05 55.7			
20	N2230-02207	03 48 20.8	23 25 16.1			
21	N2230-01601	03 48 30.1	24 20 44.3			
22	N2230-01175	03 49 07.5	24 00 40.0			
23	N2230-01127	03 49 25.1	23 47 42.0			
24	N2230-00985	03 49 56.6	24 20 56.5			

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#### Part IV: Creating the Color-Magnitude Diagram

Plot "V" and "B-V" values on the "HR Diagram of Stars in the Pleiades" graph.

#### Part V: Calculating a Distance to the Pleiades

Distance Modulus measured from graph (i.e.  $V-M_V$ ): \_\_\_\_\_

SHOW YOUR WORK FOR ALL THREE VALUES!

Distance to cluster (parsecs): \_\_\_\_\_

Distance to cluster (light years): \_\_\_\_\_

The *actual* distance to the Pleiades Cluster is 410 lightyears.

Percent Error: \_\_\_\_\_

$$distance \text{ (parsecs)} = 10 \times 10^{\left(\frac{V-M_V}{5}\right)}$$

$$1 \text{ parsec} = 3.26 \text{ lightyears}$$

$$\text{Percent Error} = \frac{| \text{Actual Distance} - \text{Calculated Distance} |}{\text{Actual Distance}}$$