Our final step in recreating some of the important steps that lead to our understanding that the universe is expanding is to construct our own Hubble diagram.

Magnitude Redshift Relationship

1. For each galaxy cluster, determine the 5th brightest galaxy.  Record the following information about each galaxy and complete the listed calculations.

| Redshift Magnitude Relationship | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Cluster** | **5th Brightest Galaxy**  **RA, Dec** | **Magnitude** | **Redshift** | **Velocity**  **c(z)** | **Log(velocity)** |
| **0085** |  |  |  |  |  |
| **0779** |  |  |  |  |  |
| **1132** |  |  |  |  |  |
| **1650** |  |  |  |  |  |
| **2034** |  |  |  |  |  |
| **2199** |  |  |  |  |  |
| **2670** |  |  |  |  |  |

1. Insert an image of the completed graph.
2. Finally, explain the graph. How is this graph evidence that the universe is expanding?

# Expedition to the Expanding Universe –

# Hubble – Humason 1936 Redshift Magnitude Relationship