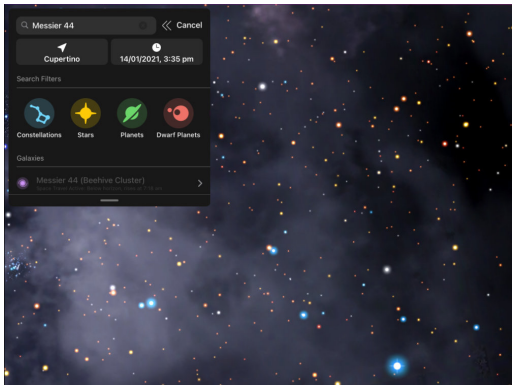
# Exploring Star Clusters - Activities (Ages 16-18)

**Today we are going to investigate:**

- The two types of star clusters
- The differences between these two types
- How to find some examples of these clusters
- How to distinguish between the two




1

**Activities**

Star clusters are groups of stars held together by their gravitational attraction. There are two types of star clusters, these are **open clusters** and **globular clusters**. Using the Search function, find and zoom into Messier 44 which is an example of an open cluster.

**Question:** Can you see why it is nicknamed the Beehive cluster?

2

The stars in an open cluster all formed together in the same place and at the same time. Stars in open clusters are always relatively young and bright. Open clusters contain a few thousand stars or less and the stars are loosely held together in the cluster by gravity. Over millions of years they will gradually drift apart. The most famous open cluster is Messier 45 (the Pleiades) which can be seen with the unaided eye in the constellation Taurus. The stars in the Pleiades appear to be embedded in a beautiful cloud of blue gas but this is an illusion. The cloud of gas is really between us and the cluster, and the stars' light is shining through it.

**Question:** Do you know another traditional name for the Pleiades? Use the ⓘ icon to bring up the Information panel to help find this alternative name.

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3

In contrast to open clusters, globular clusters are always tightly bound by strong gravitational attraction. In these clusters, hundreds of thousands of stars are crammed together in a rough sphere only a few hundred light years across.

**Question:** Using the Search function can you find and zoom into the globular cluster Messier 3?

4

Stars in globular clusters are among the oldest stars in the Universe and can have existed for ten billion years or more. Visually you can tell the two kinds of cluster apart as globular clusters lots of stars crammed into a ball while open clusters are shapeless, have fewer stars and are more spread out.

**Question:** How would you categorise these star clusters (Use Search to find them)?

Messier 92 Messier 11 Messier 13

**What we have discovered:**

- Star clusters are groups of stars held together by gravity
- There are two varieties of star cluster
- Open clusters are irregular groups of young stars
- Globular clusters are spherical masses of older stars



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