The Insider's Guide to the Galaxy Presents...

# Messier Minutes

a guide to completing RASC's Messier Observing Certificate

## Part 1 -

## Intro to RASC's Messier Observing Certificate

The following pages introduce the RASC's Messier Observing Certificate – including where to find a list of the required objects to view and how to submit your observations

**Background:**

The Messier Catalogue was developed in the 1700s by Charles Messier (1730–1817). Messier was a comet hunter working with speculum metal reflectors and small refractors that were the equivalent of a modern 80–100 mm reflector. As a result of the limited tools that he had to work with, he could not see the true nature of many of his "faint fuzzies" that are revealed in today's modern instruments.

**About the RASC Messier Certificate:**

The RASC Messier Certificate has been awarded since 1981. A certificate and pin are awarded to RASC members who **visually observe all 110 objects on the Messier list as published annually in the Observer's Handbook**. Note that there are several published versions of the Messier list, so it is important to follow this official reference. There are two versions of the Messier Certificate: Traditional (star-hopping) and Computer-aided (Go-To).

Observing the Messier Catalogue is an excellent observing project, as it contains many showpiece objects. Moreover, it allows you to see the Universe from an 18th-century perspective and to learn more about the night sky.

This Observing Program is designed to be an INDIVIDUAL EFFORT. When you complete the program and apply for your certificate, you will have met these requirements: you located the object yourself, made your own observation at the eyepiece, kept your own logbook, or pre-programmed observing forms, and then applied for your certificate on your own merit. Enjoy your journey through this program!

*Contact the Observing Committee Chair: observing@rasc.ca*

**Overview of the Messier Catalogue:**

| Messier Object Type | Number | Notes |
|---|---|---|
| Open Clusters | 28 | Includes many beautiful open clusters like M6, M7, The Beehive, The Pleiades, and The Wild Duck. |
| Globular Clusters | 29 | Includes the showpieces M13, M22, M5, and M3. |
| Bright Nebulae | 8 | Includes the great Orion Nebula as well as the Lagoon, Swan, Eagle, and Trifid Nebulae. |
| Planetary Nebulae | 4 | Includes the impressive Ring Nebula as well as the Dumbbell and Owl planetary nebulae. |
| Galaxies | 40 | Includes the amazing Andromeda Galaxy as well as M51, M33, M81/M82, and many others. |
| Double Stars | 1 | This is M40, an unusual Messier object. |
| **Total** | **110** | |

**Recording Observations Overview:**

Recording observations gives you a permanent record of all the great times you had while observing and recording scientific details of an observation can help researchers.

Very few, if any, astronomers remember everything that they have observed through the years, and for that reason alone it is wise to keep a record of your observations. Many experienced astronomers have commented on how much they enjoy looking through their logbooks and recalling the many precious memories that are contained there. It is truly worth the effort to write down your observations.

**How to Record Observations:**

One of the most practical ways of recording observations is to have a template form completed ahead of time that contains all of the known data, like the object's name, number, location, size, magnitude, and so on. You then simply write down your description of the object in the space provided and then use the time saved to explore other treasures in the night sky. The template can also include an area to make a drawing. Each week we will provide a template log form for each of the objects

discussed in *Messier Minutes*. Alternatively, you can download the entire logbook from https://rasc.ca/messier-objects.

*Drawing at the Eyepiece*

Drawing at the eyepiece can be a very rewarding experience for all the same reasons as making notes. The added bonus of a drawing is that it will clearly show what you see to other people who may visualize a text description differently than you. Drawing is also the best way to learn how to see the fine detail in the astronomical objects you observe.

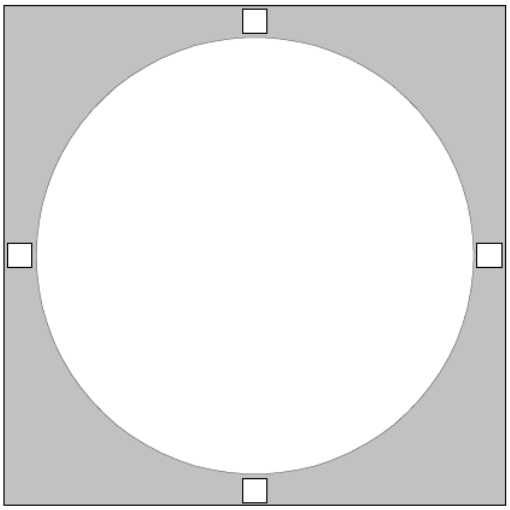
**Example of Log Page:**

*From RASC's Messier Catalogue Observing Forms*

RASC Messier Objects - M1

**Crab Nebula**

| | | | |
|---|---|---|---|
| Messier Object | **M1** | | |
| NGC | **1952** | | |
| Constellation | **Taurus** | | |
| Type | **Supernova Remnant** | | |
| Magnitude | **8.4** | | |
| Distance (Kilo light-years) | **6.3** | | |
| RA | **05 34.5** | | |
| Dec | **+22:01** | | |
| Size | **6' x 4'** | | |
| UM I / UM II | **135,136** | **77** | |
| SA | **16, 17** | | |
| Remarks | **!! Famous Crab Nebula, Supernova Remnant** | | |
| Time ( hh:mm ) | | | |
| Seeing | 1 2 3 4 5 | | |
| Transparency | 1 2 3 4 5 | | |
| Observing Location | | | |
| Telescope | | | |
| Date ( dd:mm:yyyy ) | | | |

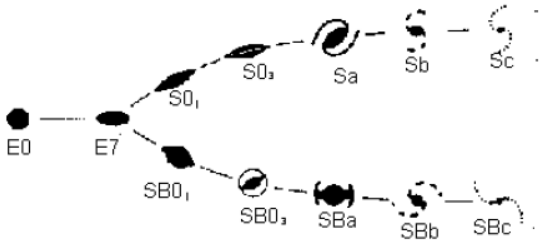


**Notes**

| | | | |
|---|---|---|---|
| PN: Planetary Nebula | RN: (diffuse) Reflection Nebula | Seeing: 1 = Best 5 = Poor | * = Number of stars in cluster |
| SNR: Supernova Remnant | EN: (diffuse) Emission Nebula | Transparency: 1 = Best 5 = Poor | ** p = Photographic Magnitude |
| GC: Globular Cluster | G-: Galaxy, with Hubble type given | Time: DD:MM:YYYY | *** !! = Showpiece Object |
| OC: Open Cluster | E/RN: Diffuse emission and reflection Nebula | Date: Specify Time Zone or UT | http://www.rasc.ca |

## Log Page Legends:

*From RASC's Messier Catalogue Observing Forms*

| FIELD | DESCRIPTION |
|---|---|
| **NGC Number:** | This is the New General Catalogue designation that consists of a 1-4 digit number. |
| **IC Number:** | This is the Index Catalogue designation that is a supplement to the New General Catalogue. |
| **Constellation:** | These are the official three letter designations for the 88 recognized constellations. |
| **Type:** | PN = Planetary Nebula. OC = Open Cluster. GC = Globular Cluster. SNR = Supernova Remnant.<br>EN= Emission Nebula. RN = Reflection Nebula. E/RN = Emission and Reflection Nebula.<br>G = Galaxies as per diagram below:<br>  |

| FIELD | DESCRIPTION |
|---|---|
| **Visual Magnitude:** | Apparent visual magnitude is a measurement of the objects brightness as seen using average human eyesight. |
| **Size:** | Dimensions of an object using degrees, minutes of arc (1/60 degree) and seconds of arc (1/60 minute.) |
| **Distance:** | Distance of object measured in light years. Note that these are estimates and sources of this data can vary. |
| **R.A. (Epoch 2000.0):** | Coordinates in Right Ascension, divided into 24 hourly sections as they rise in the east. |
| **Dec. (Epoch 2000.0):** | Coordinates in Declination as measured +90 degrees north and -90 degrees south of the celestial equator. |
| **UM I:** | Map number where you can find the object in the first edition of Uranometria 2000. |
| **UM II:** | Map number where you can find the object in the second edition of Uranometria 2000. |
| **Sky Atlas 2000:** | Map number where you can find the object in Sky Atlas 2000. |
| **Season:** | Season of the year when the object is best seen after dusk. |
| **Remarks:** | Brief description of the object and some key observing tips. |
| **Date:** | Field for recording the date of the observation. |
| **Time:** | Field for recording the time of the observation. Please specify Time Zone or Universal Time. |
| **Seeing:** | Place a circle around or an X on top of one number that best describes the stability of the atmosphere.<br>**1** = Best **2** = Above Average **3** = Average **4** = Below Average **5** = Poor<br>**Note:** A somewhat hazy sky may provide good seeing; therefore use this for measuring stability only. |
| **Transparency:** | Place a circle around or an X on top of one number that best describes how clear the sky is.<br>**1** = Best **2** = Above Average **3** = Average **4** = Below Average **5** = Poor<br>**Note:** A crystal clear sky may provide less than perfect seeing; therefore use this for measuring clarity only. |
| **Telescope:** | Field for recording the aperture and type of telescope used. **Example:** 25 cm reflector. |
| **Eyepiece:** | Field for recording the focal length and type of eyepiece used. **Example:** 17mm Plossel. |
| **Magnification:** | Field for recording the magnification of the telescope/eyepiece combination used. Magnification equals the focal length of the telescope as measured in millimeters divided by the focal length of the eyepiece in millimeters. To calculate the focal length of your telescope in millimetres, use this formula: (Aperture in inches multiplied by the focal ratio) then multiply by 25.4. For example an 8 inch aperture scope with a focal ratio of F6 would have a focal length of (8 x 6 = 48 inches) Conversion: 48 inches x 25.4 = 1219.2 mm. |
| **Observing Location:** | Field for recording the location of the observing site. |

**How to Apply for an Observing Certificate:**

1. Complete all the required observations
    a. Include date, time, where you observed, what you observed with, the viewing conditions, and notes on what you saw for each target
    b. *Note:* a sketch is optional!
2. Complete the Visual Observing Certificate Application
    a. If you can – Have two members of your centre, verify your observations
    b. If you cannot apply directly to the observing committee
3. Email observing@rasc.ca your application
4. Upload your observing logs via their *Uploader Service*
5. Wait for approval of your application
6. Receive your pin and certificate in the mail!