Outdoor Lab 6 - Messier Objects

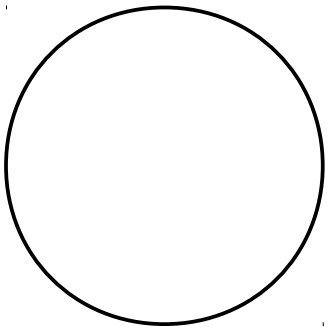
Objective: To observe as many of the visible Messier objects as possible.

1 The Messier Objects

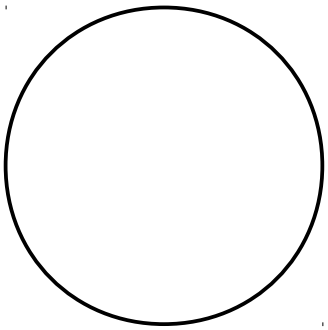
The Messier objects were cataloged by the astronomer Charles Messier in the 18th century. He originally cataloged the objects to prevent confusing them with comets, but because they are some of the brightest and best extended objects, they represent an excellent list of some of the more interesting objects in the sky. On the negative side, since many of them have relatively low surface brightness, they are difficult to see from a bright-sky site like Manhattan.

2 Observations

1. Record the time and date.
2. There is a list of Messier objects, ordered by RA, on pages 3 and 4. In addition, there is a set of photographs of the 110 Messier objects on page 5. Given the time of year, you should be able to decide which RA range will be most visible. You should also pay attention to the surface brightness column (SBrt), since objects with high surface brightness will be the easiest to find. Based on these considerations, select at least five objects that you will search for during the observing sessions.
3. Find each object, using nearby bright stars and "star-hopping" to arrive at the object you are seeking. Some objects may not be visible. For low surface brightness nebula and galaxies, we have a filter designed to filter out some of the background light that might help. Also, try using eyepieces of different focal length. Depending on the object, lower or higher power may give a better view.
4. Examine the object and sketch it on the next page as best you can.
5. If you have a camera, try taking a photograph of the object. Can you see more or less detail in the photograph than with the naked eye?
6. Repeat the above for all of the objects on your list.



Date =_____ Time =_____
RA/Dec =_____ Constellation =_____



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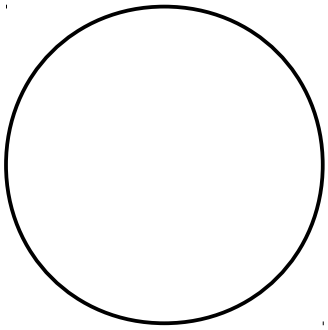
RA/Dec =_____ Constellation =_____



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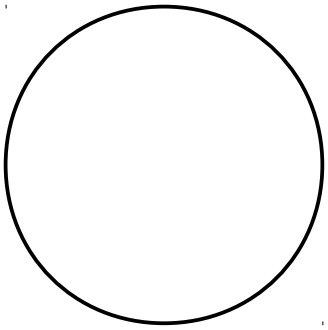
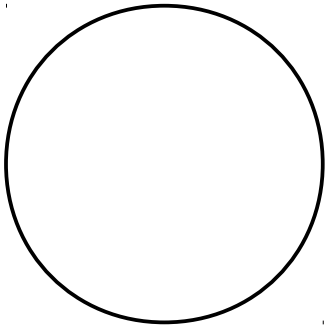
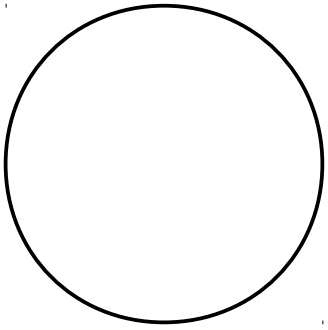


Date =_____ Time =_____
RA/Dec =_____ Constellation =_____



Date =_____ Time =_____
RA/Dec =_____ Constellation =_____



Date =_____ Time =_____
RA/Dec =_____ Constellation =_____

Obj	Type	Con	RA	Dec	Mag	SBrt	Size
M110	GAL	And	00:40.40	41:41:00	8.1	22.7	22x11
M32	GAL	And	00:42.70	40:52:00	8.1	21.1	8.7x6.5
M31	GAL	And	00:42.70	41:16:00	3.4	22.2	191x62
M103	OCL	Cas	01:33.20	60:42:00	7.4	19.9	6
M33	GAL	Tri	01:33.90	30:39:00	5.7	23	71x42
M74	GAL	Psc	01:36.70	15:47:00	9.4	23.1	11x9.6
M76	PLN	Per	01:42.40	51:34:00	10.1	20.4	2.7x1.8
M34	OCL	Per	02:42.00	42:47:00	5.2	21.5	35
M77	GAL	Cet	02:42.70	-00:01:00	8.9	21.6	7.1x6.0
M45	OCL	Tau	03:47.00	24:07:00	1.2	19.8	100
M79	GCL	Lep	05:24.50	-24:33:00	7.7	21	8.7
M38	OCL	Aur	05:28.40	35:50:00	6.4	21.6	21
M1	SNR	Tau	05:34.50	22:01:00	8.4	20.5	6x4
M42	C/N	Ori	05:35.40	-05:27:00	4	20.5	40x35
M43	C/N	Ori	05:35.60	-05:16:00	9	22.6	10
M36	OCL	Aur	05:36.10	34:08:00	6	20	12
M78	NEB	Ori	05:46.70	00:03:00	8	20.8	8x6
M37	OCL	Aur	05:52.40	32:33:00	5.6	21.1	24
M35	OCL	Gem	06:08.90	24:20:00	5.1	21	28
M41	OCL	CMa	06:46.00	-20:46:00	4.5	21	38
M50	OCL	Mon	07:02.80	-08:21:00	5.9	20.5	16
M47	OCL	Pup	07:36.60	-14:30:00	4.4	20.4	30
M46	OCL	Pup	07:41.80	-14:49:00	6.1	21.9	27
M93	OCL	Pup	07:44.60	-23:52:00	6.2	21.5	22
M48	OCL	Hya	08:13.80	-05:48:00	5.8	21.8	30
M44	OCL	Cnc	08:40.10	19:59:00	3.1	21.6	95
M67	OCL	Cnc	08:51.60	11:49:00	6.9	22.5	25
M81	GAL	UMa	09:55.60	69:04:00	6.9	22	27x14
M82	GAL	UMa	09:55.80	69:41:00	8.4	21.2	11x4.3
M95	GAL	Leo	10:44.00	11:42:00	9.7	22.2	7.4x5.0
M96	GAL	Leo	10:46.80	11:49:00	9.3	21.9	7.6x5.3
M105	GAL	Leo	10:47.80	12:35:00	9.3	21.5	5.4x4.8
M108	GAL	UMa	11:11.50	55:40:00	10	21.8	8.7x2.2
M97	PLN	UMa	11:14.80	55:01:00	9.9	21.1	3.3
M97f	PLN	UMa	11:14.80	55:01:00	---	----	3.3
M65	GAL	Leo	11:18.90	13:05:00	9.3	21.6	9.8x2.9
M66	GAL	Leo	11:20.20	12:59:00	8.9	21.5	9.1x4.2
M109	GAL	UMa	11:57.60	53:23:00	9.8	22.3	7.6x4.7
M98	GAL	Com	12:13.80	14:54:00	10.1	22.3	9.8x2.8
M99	GAL	Com	12:18.80	14:25:00	9.9	22	5.4x4.7
M106	GAL	CVn	12:19.00	47:18:00	8.4	22.4	19x7.2
M61	GAL	Vir	12:21.90	04:28:00	9.7	22.3	6.5x5.8
M40	OTH	UMa	12:22.30	58:05:00	9.1	17.5	0.9
M100	GAL	Com	12:22.90	15:49:00	9.4	22.2	7.4x6.3
M84	GAL	Vir	12:25.10	12:53:00	9.1	21.6	6.5x5.6
M85	GAL	Com	12:25.40	18:11:00	9.1	21.7	7.1x5.5
M86	GAL	Vir	12:26.20	12:57:00	8.9	21.8	8.9x5.8
M49	GAL	Vir	12:29.80	08:00:00	8.4	21.8	10x8.3
M87	GAL	Vir	12:30.80	12:24:00	8.6	21.6	8.3x6.6
M88	GAL	Com	12:32.00	14:25:00	9.6	21.7	6.9x3.7
M91	GAL	Com	12:35.40	14:30:00	10.2	22.2	5.4x4.3
M89	GAL	Vir	12:35.70	12:33:00	9.8	21.9	5.1x4.7
M90	GAL	Vir	12:36.80	13:10:00	9.5	22.2	9.6x4.4
M58	GAL	Vir	12:37.70	11:49:00	9.7	21.9	5.9x4.7
M68	GCL	Hya	12:39.50	-26:45:00	7.8	21.8	12
M104	GAL	Vir	12:40.00	-11:37:00	8	21	8.7x6.3
M59	GAL	Vir	12:42.00	11:39:00	9.6	21.5	5.4x3.7

M60	GAL	Vir	12:43.70	11:33:00	8.8	21.5	7.4x6.0
M94	GAL	CVn	12:50.90	41:07:00	8.2	21.8	11x9.1
M64	GAL	Com	12:56.70	21:41:00	8.5	21.5	10x5.4
M53	GCL	Com	13:12.90	18:10:00	7.6	21.8	13
M63	GAL	CVn	13:15.80	42:02:00	8.6	22.2	13x7.2
M51	GAL	CVn	13:29.90	47:12:00	8.4	21.7	11x6.9
M83	GAL	Hya	13:37.00	-29:52:00	7.5	21.6	13x12
M3	GCL	CVn	13:42.20	28:23:00	6.2	20.8	16
M101	GAL	UMa	14:03.20	54:21:00	7.9	23.8	29x27
M5	GCL	Ser	15:18.60	02:05:00	5.7	20.5	17
M80	GCL	Sco	16:17.00	-22:59:00	7.3	20.7	8.9
M4	GCL	Sco	16:23.60	-26:32:00	5.6	21.3	26
M107	GCL	Oph	16:32.50	-13:03:00	7.9	21.5	10
M13	GCL	Her	16:41.70	36:28:00	5.8	20.6	17
M12	GCL	Oph	16:47.20	-01:57:00	6.7	21.2	15
M10	GCL	Oph	16:57.10	-04:06:00	6.6	21.1	15
M62	GCL	Oph	17:01.20	-30:07:00	6.5	20.9	14
M19	GCL	Oph	17:02.60	-26:16:00	6.8	21.2	14
M92	GCL	Her	17:17.10	43:08:00	6.4	20.2	11
M9	GCL	Oph	17:19.20	-18:31:00	7.7	21.2	9.3
M14	GCL	Oph	17:37.60	-03:15:00	7.6	21.6	12
M6	OCL	Sco	17:40.10	-32:13:00	4	19.1	20
M7	OCL	Sco	17:53.90	-34:49:00	3	21.1	80
M23	OCL	Sgr	17:56.80	-19:01:00	5.5	21.3	27
M20	C/N	Sgr	18:02.30	-23:02:00	6.3	21.9	30x20
M20f	C/N	Sgr	18:02.30	-23:02:00	---	----	30x20
M8	C/N	Sgr	18:03.80	-24:23:00	5	21.6	50x30
M8f	C/N	Sgr	18:03.80	-24:23:00	---	----	50x30
M21	OCL	Sgr	18:04.60	-22:30:00	5.9	20.1	13
M24	OTH	Sgr	18:16.90	-18:29:00	3.1	20.5	95x35
M16	C/N	Ser	18:18.80	-13:47:00	6	20.7	18x15
M16f	C/N	Ser	18:18.80	-13:47:00	---	----	18x15
M18	OCL	Sgr	18:19.90	-17:08:00	6.9	20.3	9
M17	NEB	Sgr	18:20.80	-16:11:00	6	21.4	25x20
M17f	NEB	Sgr	18:20.80	-16:11:00	---	----	25x20
M28	GCL	Sgr	18:24.50	-24:52:00	6.8	20.6	11
M69	GCL	Sgr	18:31.40	-32:21:00	7.6	20.5	7.1
M25	OCL	Sgr	18:31.60	-19:15:00	4.6	20.5	29
M22	GCL	Sgr	18:36.40	-23:54:00	5.1	20.6	24
M70	GCL	Sgr	18:43.20	-32:18:00	7.9	21	7.8
M26	OCL	Sct	18:45.20	-09:24:00	8	21.1	8
M11	OCL	Sct	18:51.10	-06:16:00	5.8	20.2	14
M57	PLN	Lyr	18:53.60	33:02:00	8.8	17.8	1.4x1.0
M54	GCL	Sgr	18:55.10	-30:29:00	7.6	21	9.1
M56	GCL	Lyr	19:16.60	30:11:00	8.3	21.2	7.1
M55	GCL	Sgr	19:40.00	-30:58:00	6.3	21.3	19
M71	GCL	Sge	19:53.80	18:47:00	8.2	21.1	7.2
M27	PLN	Vul	19:59.60	22:43:00	7.3	20.1	8.0x5.7
M27f	PLN	Vul	19:59.60	22:43:00	---	----	8.0x5.7
M75	GCL	Sgr	20:06.10	-21:55:00	8.5	21	6
M29	OCL	Cyg	20:23.90	38:32:00	7	19.9	7
M72	GCL	Aqr	20:53.50	-12:32:00	9.3	21.8	5.9
M73	OTH	Aqr	20:59.10	-12:38:00	9.6	18.2	1
M15	GCL	Peg	21:30.00	12:10:00	6.2	20.2	12
M39	OCL	Cyg	21:32.20	48:26:00	4.6	20.8	32
M2	GCL	Aqr	21:33.50	-00:49:00	6.5	20.7	13
M30	GCL	Cap	21:40.40	-23:11:00	7.2	21	11
M52	OCL	Cas	23:24.20	61:35:00	6.9	21.1	13