

Year	Total	Amateurs	Spacecraft	Observatories
2012	60	27	1	32
2011	49	28	2	19
2010	161	29	119	13
2009	227	35	188	4
2008	220	34	182	4
2007	223	35	170	18
2006	206	31	152	23
2005	221	23	169	29
2004	223	8	172	43
2003	193	7	149	37
2002	182	9	131	42
2001	149	4	107	38
2000	135	9	99	27
1999	129	18	87	24

Every year, professional astronomers and dedicated amateur astronomers use everything from simple binoculars to sophisticated computer-driven telescopes to discover new comets. The table to the left gives a count of the number of comets detected between 1999 and 2012.

Comet hunters carefully compare images of the same part of the sky over a period of days or weeks. Although stars remain fixed, comets appear as fuzzy spots of light that change their positions.

Problem 1 – During 2010, what percentage of comet discoveries were made by amateur astronomers, spacecraft and ground-based observatories?

Problem 2 – During the years 1999 to 2012, what is the average number of comets discovered by amateur astronomers and by ground-based observatories?

Problem 3 – What percentage of new comets would have been lost in 2012 had there not been any amateur astronomers searching the skies?

The tabulated data is based upon the Catalog of Comet Discoveries archive at <http://www.comethunter.doc>

Problem 1 – During 2010, what percentage of comet discoveries were made by amateur astronomers, spacecraft and ground-based observatories?

Answer: Amateur astronomers: $100\% \times (29/161) = \mathbf{18\%}$
 Spacecraft: $100\% \times (119/161) = \mathbf{74\%}$
 Observatories : $100\% \times (13/161) = \mathbf{8\%}$

Problem 2 – During the years 1999 to 2012, what is the average number of comets discovered by amateur astronomers and by ground-based observatories?

Answer: Total for amateurs = 297 over 14 years so the average was **21 comets/year**.
 For observatories: 353 over 14 years so the average is **25 comets/year**.

Problem 3 – What percentage of new comets would have been lost in 2012 had there not been any amateur astronomers searching the skies?

Answer: In 2012 the total number of comets was 60, and of these 27 were detected by amateur astronomers, so $60 - 27 = 33$ detected by other means, then $100\% \times (33/60) = \mathbf{55\%}$ of the comets would have remained undetected.