

Which telescope should I buy?

Note that these are the views of our volunteers, and we have not tested each of these models. However they are all reputable brands and make sure you buy from a reputable, specialist distributor, not chain stores, department or grocery stores. Please do your own research to satisfy yourself that these are the right choices. Astronomy Ireland is affiliated with Astroshop.eu – if you are buying from them please use the links included in the table below, or by browsing to https://www.astroshop.eu/?affiliate_id=astronomyireland

Although magnification isn't everything, to get an idea of the magnification it is the *focal length* of the telescope that is important. You can calculate the magnification by taking the focal length of the telescope and dividing it by the focal length of the eyepiece. Most telescopes below come with a 25mm eyepiece. Therefore to get a comparative magnification take the focal length of the telescope and divide by 25. You can find the focal length in the specifications for the telescope on the website.

You can get an idea below. This table shows the magnification assuming only a standard 25mm lens. It also includes an *approximation* of how large the moon is in the eyepiece, assuming you have a standard 25mm eyepiece *and* a 2x Barlow lens. It is not meant to be an exact replica of what you will see as the exact view depends on the eyepiece type and other factors, but does give an indication of the view with different focal lengths.

Focal Length of Telescope	Magnification with 25mm eyepiece	Approximation of the moon with 2x Barlow lens
300mm	12x	
400mm	16x	
500mm	20x	

Focal Length of Telescope	Magnification with 25mm eyepiece	Approximation of the moon with 2x Barlow lens
650mm	26x	
700mm	28x	
750mm	30x	
900mm	36x	
1000mm	40x	
1250mm	50x	
1300mm	52x	

For casual observing in low-budget ranges this is an acceptable metric to use. However at the higher end, especially for astrophotography, the magnification is not everything, and there are other

factors to consider. The best bet if this is your budget and interest would be to contact the specialist stockist/distributor.

The following list is intended for you to find the category that suits you and shows a potential list of scope models that fit in this category.

- Simple setup (for children to do by themselves, or adults who do not want to learn the more complex setup routine): see page 4. These are all Dobsonian mount telescopes, which is a simple mounting system easy to set up.
- Complex setup (you have some technical/mechanical ability and can learn from YouTube videos. These scopes may need to be polar aligned or there may be computerised setup required. Dobsonian (aka Dobson or DOB) mounts are simple to set up. Equatorial (aka EQ) mounts are more complex. Computerised “go-to” scopes need a setup process via a combination of manual pointing the scope at bright star(s) and using the handheld controller): see page 5
- Astrophotography: Best bet here is to speak with the dealer. These tend to the higher end price brackets.

The things you want to see in the scope will also be affected by the budget:

- For the moon alone, the lower budget (<€100) is acceptable. Jupiter’s moons will also be visible, but Saturn’s rings or Mars details will not.
- For planets the middle budgets (€100-€300) will be better. The bigger the magnification the better the view. At this range Saturn’s rings will be visible. At the higher end (up to €500) Mars should show some surface detail under good seeing conditions.
- For larger, brighter deep space objects the middle-high budgets will be required.
- For serious planetary or deep space viewing the high budget scopes will be required (€1000+)

Other notes:

Check what is included in the accessories list. It is best to have:

- At least 2 eyepieces, ≈25mm and ≈10mm.
- Also good to have Barlow lenses. These multiply the magnification without changing the width of the part of the eyepiece you look through (eye relief). Smaller eyepieces have a narrower aperture so they are harder to get your head aligned over to see through them properly. The Barlow lens removes that restriction but gives you better magnification. Go for a 2x Barlow and also possibly 3x Barlow. 2x doubles the magnification, 3x triples it. You should expect to spend around €40 on a decent 2x, and for 3x Barlow go for a more expensive (€60) but shorter model.

If it doesn’t come with these then you should consider adding these to your purchase if possible. If not then go for the best scope you can afford, you can always add eyepieces later if needed.

Simple setup telescopes

This category of scope is for children to do by themselves, or adults who do not want to learn the more complex setup routines.

Most important in this category is a stable mount that is not heavy or cumbersome, and is easy to set up.

Within each budget category the telescopes are listed in reverse order of magnification (highest magnification first).

Prices may vary, these are estimates given below.

Budget	Model	Type
<€100	Meade Dobson telescope N 82/300 LightBridge	Dobsonian
	Skywatcher N 76/300 Heritage Dobsonian	Dobsonian
	Celestron Dobson telescope N 76/300	Dobsonian
	Omegon Dobson telescope N 76/300 DOB	Dobsonian
€100-€200	Omegon Dobson telescope MightyMak 80	Dobsonian
	Omegon Dobson telescope MightyMak 60	Dobsonian
	Bresser Dobson telescope N 130/650	Dobsonian
	Skywatcher N 100/400 Heritage Dobsonian	Dobsonian
€200-€300	Note: In this category the scopes are getting a bit bigger and bulkier. For children check the weight & size against what you feel the child is capable of handling.	
	Omegon Dobson telescope MightyMak 90	Dobsonian
	Skywatcher Dobson telescope N 150/750 Heritage FlexTube	Dobsonian
	Skywatcher Dobson telescope N 130/650 Heritage FlexTube	Dobsonian
	Meade Dobson telescope N 130/650 LightBridge Mini	Dobsonian
	Omegon Dobson telescope N 102/640	Dobsonian
	Meade Dobson telescope N 114/450 LightBridge Mini	Dobsonian

Note that this author has personal experience with the Skywatcher N100 scope which is very good quality and can be operated by the 7-year old in question (who is now 9 and still uses the scope).

More complex setup telescopes

This category of scope is for older teenagers or adults who are willing to learn through YouTube videos and practice how to set up these scopes, or for children if the adult is willing to help them set it up.

- Dobsonian (aka Dobson or DOB) mounts are simple to set up.
- Equatorial (aka EQ) mounts are more complex and need to be set to the correct latitude and be polar aligned. If this doesn't daunt you then you want to go with the types that have the slow motion controls otherwise they will be difficult to use.
- Alt-azimuth mounts are also simple but are difficult to use and generally quite finicky. I recommend sticking with the Dobsonian mounting system if the Equatorial mounting system seems too complex.
- Computerised "go-to" scopes need a setup process via a combination of manual pointing the scope at bright star(s) and using the handheld controller.

Within each budget category the telescopes are listed in reverse order of magnification (highest magnification first).

Note that this list is not exhaustive, there are many other options. Please do your own research to satisfy yourself that you are buying the correct model for your needs.

Budget	Model	Type
<€100	Meade Dobson telescope N 82/300 LightBridge	Dobsonian
	Skywatcher N 76/300 Heritage Dobsonian	Dobsonian
	Celestron Dobson telescope N 76/300	Dobsonian
	Omegon Dobson telescope N 76/300 DOB	Dobsonian
€100-€200	Omegon Dobson telescope MightyMak 80	Dobsonian
	Bresser Telescope AC 70/900 Lyra EQ	Equatorial
	Omegon Dobson telescope MightyMak 60	Dobsonian
	Celestron Telescope N 76/700 Astromaster EQ	Equatorial
	Bresser Dobson telescope N 130/650	Dobsonian
	Skywatcher N 100/400 Heritage Dobsonian	Dobsonian
€200-€300	Skywatcher Maksutov telescope MC 90/1250 SkyMax table top tripod	Equatorial
	Skywatcher Dobson telescope MC 90/1250 Heritage Virtuoso	Go-to
	Omegon Dobson telescope MightyMak 90	Dobsonian
	Celestron Telescope N 114/1000 Astromaster EQ	Equatorial
	Meade Telescope N 127/1000 Polaris EQ	Equatorial
	Skywatcher Dobson telescope N 150/750 Heritage FlexTube	Dobsonian
	Skywatcher Dobson telescope N 130/650 Heritage FlexTube	Dobsonian
	Meade Dobson telescope N 130/650 LightBridge Mini	Dobsonian
	Skywatcher Telescope N 130/650 Starquest EQ	Equatorial
	Omegon Dobson telescope N 102/640	Dobsonian
	Skywatcher Dobson telescope N 114/500 Heritage Virtuoso	Go-to
Meade Dobson telescope N 114/450 LightBridge Mini	Dobsonian	

Budget	Model	Type
€300-€500	Skywatcher Maksutov telescope MC 102/1300 SkyMax BD AZ-S GoTo	Go-to
	Omegon Maksutov telescope MightyMak 90 AZ Merlin	Go-to
	Meade Telescope N 114/1000 StarNavigator NG 114 AZ GoTo	Go-to
	Omegon Maksutov telescope MightyMak 80 AZ Merlin	Go-to
	Skywatcher Telescope N 150/750 Explorer BD EQ3-2	Equatorial
	Omegon Telescope N 150/750 EQ-3	Equatorial
	Omegon Maksutov telescope MightyMak 60 AZ Merlin	Go-to
	Celestron Telescope N 130/650 StarSense Explorer DX 130 AZ	Azimuthal*
	Omegon Advanced Telescope 130/650 EQ-320	Equatorial
	Skywatcher Telescope N 114/500 SkyHawk 1145PS AZ-GTe GoTo WiFi	Go-to

* This type of mounting system includes an interesting feature that allows you to use your smartphone to be a guide to the night sky, linked to your telescope mount. See the website for more details.