



## Information Sheet

# Buying your own telescope

Thinking of buying a Telescope? We've got a handy guide to help you cut through the jargon and find the right 'scope for you!

Buying your own Telescope doesn't have to be a complicated experience. With a huge range of telescopes on the market, making sure you buy the 'right' one for your needs can be a daunting task. We've put together some useful facts to help you find your perfect match for the night sky.

### 1. Width is more important than length.

Think of your telescope as a "light bucket". Because objects in the night sky can be very faint, we need to collect as much of their light (their photons) as possible so we can make them visible to our eyes.

The wider your telescope, the greater your aperture - and the more light you can catch in your bucket.

Telescopes should be advertised by their width (which we call the aperture), not their length. 200mm (8in) is a good aperture size for most beginners.

### 2. Refractors versus Reflectors.

The two main types of telescope setups are Refractors (telescopes which use glass lenses) and Reflectors (telescopes which use mirrors).

Refractors (Lenses) are usually a little cheaper than Reflectors (Mirrors).

Reflectors, however, can have much larger apertures as it's much easier to make a big mirror than a big lens.

A good rule of thumb - Refractors are usually long and thin, while reflectors are short and fat. Refractors are more suited to casual; reflectors are more suited to enthusiasts.

### 3. Don't skimp on your mount.

To see anything in the night sky, you need to keep your telescope still and pointed in the right direction. With a solid and stable mount you can even use a pair of binoculars to see some pretty fantastic things in the night sky.

While most telescopes come packaged with a stand and mount, the quality of these parts will vary. If you find you're getting a lot of unwanted movement during use - even when everything is locked down - it might mean you need to replace those parts.

A telescope which doesn't stay still is about as useful as a cardboard tube.

### 4. Automatic or Manual?

Some telescopes can be computer controlled or have a built in 'seeking' function. These telescopes allow you to put in the coordinates of a star or its name - and the telescope will "find" it for you.

These sorts of systems are typically more expensive than their manual counter parts, but they take a lot of the frustration out of finding objects in the sky.

Computer aided telescopes do have one big drawback though: every time they are moved or setup somewhere else, they require a time consuming calibration.

## 5. Don't buy another telescope, buy another eyepiece.

The telescope you buy – refractor or reflector – will most likely come with eyepieces (that is, the lens you look through).

The included eyepiece will not always be fantastic quality and may only work well in certain conditions, such as when the moon is bright. It's similar to buying better lenses for a camera, with some working better in certain conditions.

If you're looking to upgrade your telescope, you might consider purchasing some different eyepieces (which control things such as magnification and filtration) for different things you wish to view.

## 6. Magnification: Need or want?

Magnification is usually marketed as the most important aspect of a telescope by retailers.

But the higher the magnification, the more challenging it is to actually see anything, and it can even cause problems when using your telescope.

At high levels of magnification – typically over 250x – the atmosphere and light pollution can lead to blurred, grainy or distorted views. And if your mount is anything less than perfect, keeping it on target at these high levels of zoom can be a serious struggle.

The truth is, a good telescope should be able to show you most of the planets, nebulas and star clusters with even a limited magnification.

## 7. Know what you want to use it for.

Before you splash out on a telescope at the top of the range, have a realistic idea of how much time you are going to spend using it.

Is it going to get used regularly or once every few years? Is there a chance it might get left in the cupboard gathering dust for a few years?

What do you want to use it to look at? Is it something you can even see with a ground-based telescope?

And are you planning to take photos of what you see? Will you want to mount a camera to it?

Even if you don't know the answers yet, you should at least ask yourself these questions.

## 8. Don't forget your map.

Just like a car is pointless without a destination, a telescope without knowledge of the night sky is the same.

A good star atlas or an understanding of "what is where" can make all the difference in how much use you'll get from your telescope.

Fortunately, there are a range of free programs that can help (such as Stellarium and KStars) along with apps for your smart phone too. If you really want to get the most out of the night sky, an astronomy calendar for the year will let you know what's interesting in the sky every night.

## 9. Look for a bargain, but don't expect one.

Cheap telescopes are cheap for a reason.

They're also the most likely to be abandoned due to frustration.

Be prepared to spend about \$500 AUD – much cheaper than this will likely end up disappointing you, but there will be a few exceptions during sales.

In this price range you can get a basic, straightforward telescope, so quality is more important than big magnification numbers or additional functions.

Consider buying from a specialist, rather than a toy store or camera store – not only will they'll be able to answer your questions, they'll be able to help you find a quality telescope to fit your budget.

If you're confident in what you're looking for don't be afraid to search for a second-hand telescope. Experienced astronomers are always upgrading and selling their old gear.

## 10. Make the experience fun.

You are buying one of the greatest pieces of scientific equipment and jumping into one of the greatest hobbies in the world! Remember the ultimate goal in buying a telescope is for you to enjoy yourself.

Don't get bogged down by the technical jargon and prices if that's not your thing.

Just make sure you start your future in astronomy with excitement, curiosity and a smile.

