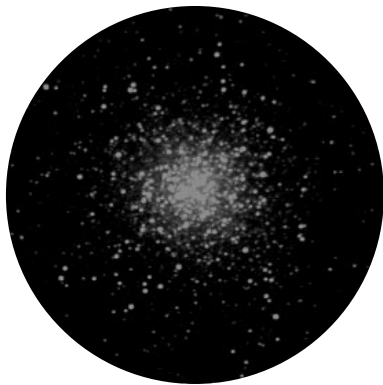


**LIGHT GATHERING POWER**

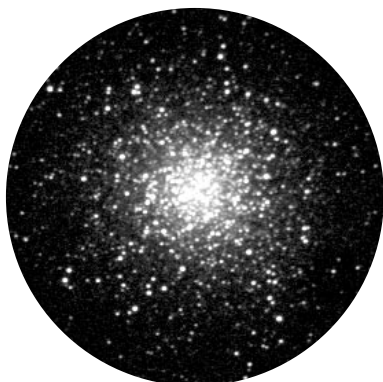
The prime function of a telescope is to gather light. The larger the telescope, the more light it can gather. Telescopes are rated by their aperture so a 152mm (6inch) instrument has a lens or mirror which is 152mm in diameter. The light gathering power of a telescope is proportional to the surface area of the lens or mirror, or the square of its aperture, thus a 152mm (6inch) aperture instrument will gather four times as much light as a 76mm (3inch) telescope.



*M13-Globular Cluster  
through a 3" telescope*



*M13-Globular Cluster  
through a 6" telescope*



*M13-Globular Cluster  
through a 12" telescope*

**RESOLUTION—"HOW MUCH"**

Resolution is a telescope's ability to reveal fine detail; especially low-contrast detail such as the ability to split binary stars and reveal details on the Solar System's objects. How well an instrument performs depends on the quality of its optics and its aperture.



*Saturn  
through a 3" telescope*



*Saturn  
through a 6" telescope*



*Saturn  
through a 12" telescope*

**MAGNIFICATION—"HOW BIG"**

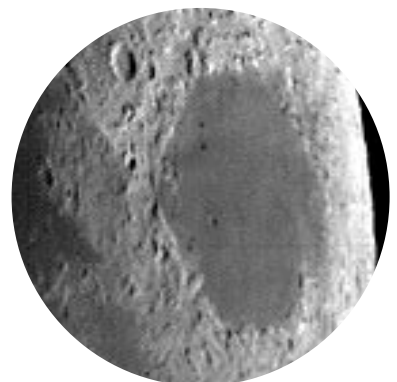
Simply changing the eyepiece will vary the magnification that a telescope provides. Magnification is equal to the telescope's focal length divided by the eyepiece's focal length, so a 2000mm telescope fitted with a 40mm eyepiece gives a 50-times magnification. Avoid the temptation to buy very high-powered eyepieces first: you will use low-powered ones more often, and every time you double the magnification you will get only one quarter of the brightness.



*The Moon  
at 30x magnification*



*The Moon  
at 100x magnification*



*The Moon  
at 250x magnification*