

## Telescope Worksheet

1. Know the following parts of telescopes and their function:

Tube

Primary mirror/lens

Secondary mirror

Eyepiece

Focuser knob

2. What is the difference between a reflector and refractor telescope?

3. On our 8 inch telescope , which part is 8 inches?

4. What advantages does an 8-inch telescope have over a 4-inch telescope? In what ways does it not have advantages?

5. What does the number of millimeters on different eyepieces refer to?

6. How is the view through a long focal length eyepiece different from that through a short focal length eyepiece?

7. A telescope has an objective aperture of 100 millimeters in diameter. What is the maximum effective magnification of this telescope?

8. What is the f-ratio of a telescope with a 15 cm aperture and a focal length of 1.50m?

9. Complete the chart with the terms in parenthesis

	Low f/ratio	Higher f/ratio
Fast or slow telescope (faster or slower)		
Brightness of telescope if they are similar size (brighter or dimmer)		
Magnification of image (lower wide-field view or narrow higher magnification)		
Good for viewing ... (planets or star clusters & faint nebulae)		

10. Which would provide a brighter image an 8 inch f/10 or an 8 inch f/6?

11. Which would provide more magnification, a 6 inch f/8 or a 6 inch f/5?

12. Which would provide a wider field of view a 4 inch f/6 or a 4 inch f/4?
13. Using a diagram, explain what the focal length of the eyepiece and the focal length of the objective are.
14. What does magnification mean?
15. Write the equation that links magnification to the focal length of the objective and the focal length of the eyepiece.
16. What is the magnification of a telescope if the focal length of the eyepiece is 7 cm and the focal length of the objective is 140 cm?
17. Use this equation to calculate the magnification of the following telescopes, using an eyepiece with focal length 50 mm
- a. A reflector with focal length 150 cm
  - b. A reflector with focal length 1 meter
18. Complete the chart comparing an eye and a telescope.

	Eye	Telescope
Optical system Opening Focusing Sensor		
Aperture opening		
Exposure time		
Resolution		
Field of View		
Color vs Black & White		