Summary of Terrific Telescopes Activities

Light Through an Acrylic Block – Demonstration: 10-15 minutes
Starting with a laser shining at normal incidence to an acrylic block, the teacher will slowly increase the incident angle. The students will observe that the path of the light changes as the incident angle increases.

Light Passing Through a Convex Lens – Demonstration: 15-20 minutes
When parallel light beams encounter an object such as a lens, its shape can cause different light rays to bend by different amounts. Students predict the path of the rays through an acrylic block and through a lens, then determine if they are correct by using a mister or chalk dust to expose the laser beams.

Finding the Focal Length Using a Distant Object: 30-40 minutes
When looking at a brightly colored lamp on one side of the room, students will measure the focal length of a lens by forming an image of the light on the screen and measuring the distance between the lens and the screen.

Simple Magnifiers: 30-40 minutes
In this activity, students will explore the magnifying properties of the lenses and notice the connection between how much the lens is curved and its ability to magnify. The students can also see how a juice bottle filled with water can be used as a magnifier as well.

Build a Refracting Telescope I: 30-40 minutes
This is the first of several activities relating to refracting telescopes. Students will first determine how to arrange two lenses so that when they look through them they will see a magnified image of a distant object.

Build a Refracting Telescope II: 30-40 minutes
Using the configuration of lenses that they found previously, students will create a magnified image of a distant object. By placing the velum screen in varying location, students will determine the function of each lens in a basic refracting telescope.

Build a Refracting Telescope III: 20-30 minutes
The students in groups of two or three will build the refracting telescope from the kit. They will then look through the telescope at distant objects, making notes about their observations.

A Measure of Resolution: 30-40 minutes
Using telescopes from the previous activity, students will make and graph measurements to compare the telescope's resolution with that of their eye. Additional options include the comparison of the telescope's measured resolution to its theoretical resolution.

Build a Three-Lens Refracting Telescope – An Activity for Student Assessment: 50-60 minutes
What happens to a telescope's image when a third lens is added to the system? Students will find that a third lens creates an upright image and will draw the optical layout of such a system.

Introduction to Ultraviolet Light
Using a black light and some ultraviolet sensitive beads, your students will learn about ultraviolet light.