



## Introduction to Binoculars



DO/SHOW	SAY
Welcome	Binoculars are a tool used by scientists to gather data. This tool allows you to see things in great detail without disturbing the flora and fauna you are investigating. We are going to learn how to use binoculars and practice using them today.
Configuration Specs	<p>The numbers on binoculars refer to the optical configuration. Let's consider 7x35 binoculars as an example.</p> <ul style="list-style-type: none"> <li>• The first number, in this case 7, refers to the magnification. The magnification tells you how many times closer an object will appear when looking through the binoculars compared to the naked eye.</li> <li>• The second number, in this case 35, refers to the diameter of the objective lens in millimeters.</li> </ul>
Binocular Parts	<p>Here are the important parts of binoculars:</p> <ul style="list-style-type: none"> <li>• Eyepiece</li> <li>• Objective lenses</li> <li>• Diopter focus ring</li> <li>• Center focus ring</li> </ul>
Eyepiece	<p>Let's start with the eyepiece:</p> <ul style="list-style-type: none"> <li>• The eyepiece is named because it is the lens that is closest to your eyes.</li> <li>• The eyepiece is also referred to as the ocular lens.</li> <li>• The ocular lenses are the part of the binoculars where the magnification occurs.</li> </ul>



Objective Lens	<p>Next up is the objective lenses:</p> <ul style="list-style-type: none"> <li>• The objective lenses are the large lenses at the front of the binoculars.</li> <li>• The objective lenses are the lenses that let in the light and focus the light into a visible image.</li> <li>• The more light that is let in, the better quality the image will be.</li> <li>• However, the bigger the lenses, the heavier the binoculars. The heavier the binoculars, the harder they are to use. Therefore, choosing the size of the objective lenses is a balancing act.</li> </ul>
Diopter focus ring	<p>The diopter focus allows you to compensate for the differences between your eyes.</p> <ul style="list-style-type: none"> <li>• The diopter focus is usually on the right or left eyepiece.</li> <li>• We will use the diopter ring to get an object into focus shortly.</li> </ul>
Center focus ring	<p>The center focus ring will adjust the distance between the eyepiece and the objective lenses.</p> <ul style="list-style-type: none"> <li>• This focus ring is appropriately placed in the center of the binoculars.</li> <li>• Adjusting the center focus knob changes the place where the light is focused and is the main adjustment you will make.</li> </ul>
Stance	<p>Make sure you are comfortable – stand with your feet hip-width apart and don't lock your knees.</p>
Find an object	<ul style="list-style-type: none"> <li>• Find an object in the near distance and lock onto it.</li> <li>• Without moving your head or eyes, slowly bring the binoculars up to your eyes.</li> </ul>
Adjusting the Binoculars	<ul style="list-style-type: none"> <li>• Start by adjusting the distance between the two barrels so that they are the correct width for your eyes.</li> <li>• Next, with both eyes open, use the center focus to make the object as clear as possible.</li> <li>• Finally we will use the diopter ring for fine focusing. If the diopter ring is on the right eyepiece, start by closing the right eye (switch eyes if it's on the left eyepiece).</li> <li>• Again use the center focus to make the object as sharp as possible.</li> <li>• Open your right eye and shut the left eye.</li> <li>• Use the diopter ring to focus with only the left eye open.</li> <li>• With both eyes open you should have a clear, crisp view of the object.</li> <li>• From this point forward you should only need to use the center focus ring as you focus on objects at differing distances away.</li> </ul>
Practice	<p>Any questions? Okay! Let's practice!</p>