USER GUIDE

Opt-Sim

In Mozilla Science Lab

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1 Scope and Purpose of the project

We are developing a project for optical lenses experiment simulation. It will be like getting image and ray diagram for object's position from lenses like biconvex, biconcave, Plano-Convex, Convex-Concave, Meniscus, Plano-Concave. We made that dynamic like we can drag the object towards or backward from lenses. We used Html5, kineticjs (JavaScript library) and CSS3 to develop this. We are contributing this project for Mozilla Science Lab.

2 Process Overview project

It works in two main categories. Fist one is one lens experiment. Other one is two lenses experiment. In one lens experiment, there are six categories with biconvex, biconcave, Plano-Convex, Convex-Concave, Meniscus, Plano-Concave lenses. In two lenses experiment, there are numerous categories with the pairs like (biconvex, biconvex), (biconcave, biconcave), (biconvex, biconcave), (biconcave, biconvex) and etc. Each categories works five different cases such as object beyond 2F, object between F and 2F, object at 2F, object at F, object within F.

3 How you can use

3.1 Introduction the Structure of Interface

This application consist Experimental area, Lenses Toolbar, Objects Toolbar and Help button. We can perform simulation in this Experimental Area.

In the lenses toolbar types of lenses are shown such as biconvex, biconcave, Plano-Convex, Convex-Concave, Meniscus, Plano-Concave.

In the object toolbar there are three objects, they are Arrow, Triangle and Polygon.

To get Help, there is an icon with question mark.

3.2 How to insert Lens and Object to the experimental area

There is horizontal line placed in the experimental area and that is center axis of lens. We can drag and drop lens from lens toolbar. We can have maximum of two lenses in experimental area. You can add them by drag and drop wherever you want and which order you want. You can replace these lenses by drag and drop the wanted lens over or near to the existing lens. After you added lens the 'F' and '2F' will be added in both side of the lens. If you add second lens, F and 2F of each lens's color will be different. So, you can easily identify F, 2F for corresponding lens.

In objects tool bar three objects are placed. You can select one of these objects by clicking the corresponding icon to get the object in experimental area. You can add only one object at a time. if you click on the other object, the existing object will be replaced by new object

3.3 How to adjust Lens and Object

Lenses will be placed in center of the experimental area and they can drag only in horizontal axis. You can drag the lens within the range of between object and end of the experimental area. If there are two lenses, first lens can move between object and second lens's position. Second lens can move between first lens's position and end of the experimental area. So we can change the distance between the lenses.

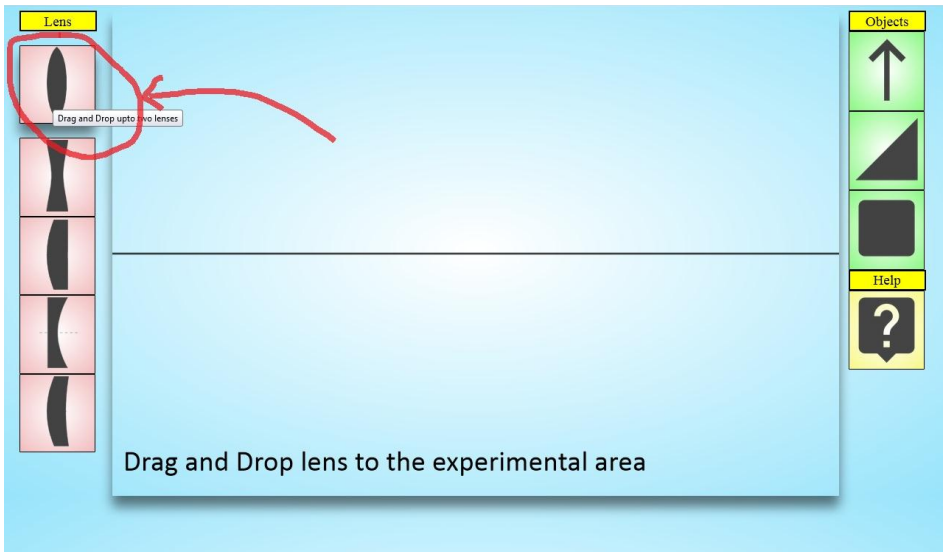
Object can be move between starting of the experimental area and lens's position. So, we can change the distance from the lens. And you can identify the object's position such as beyond 2F, between 2F and F, within F by looking at theF,2F marks.

While you drag lens or object you can see the ray diagram and the image generated by lens for corresponding object will appear dynamically

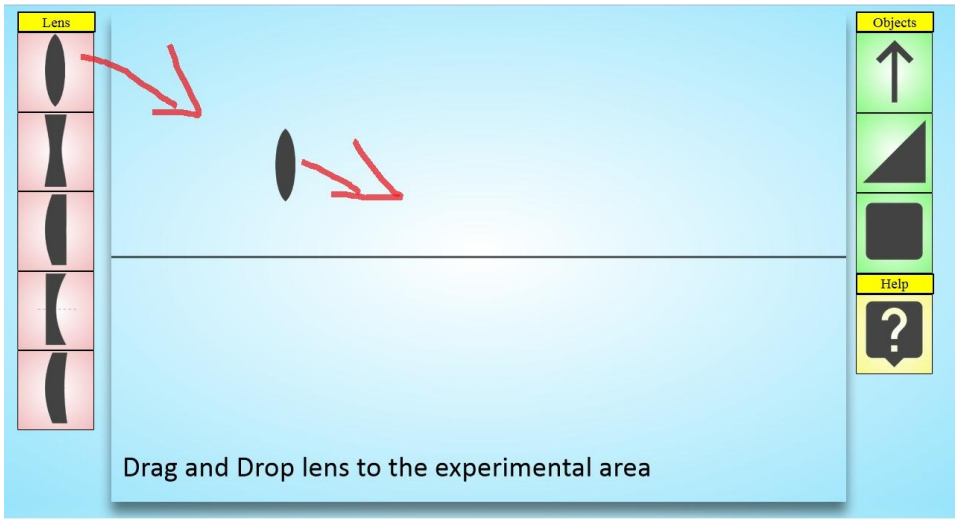
3.4 How to remove Lens

To remove a lens from the experimental area just double click on the lens.

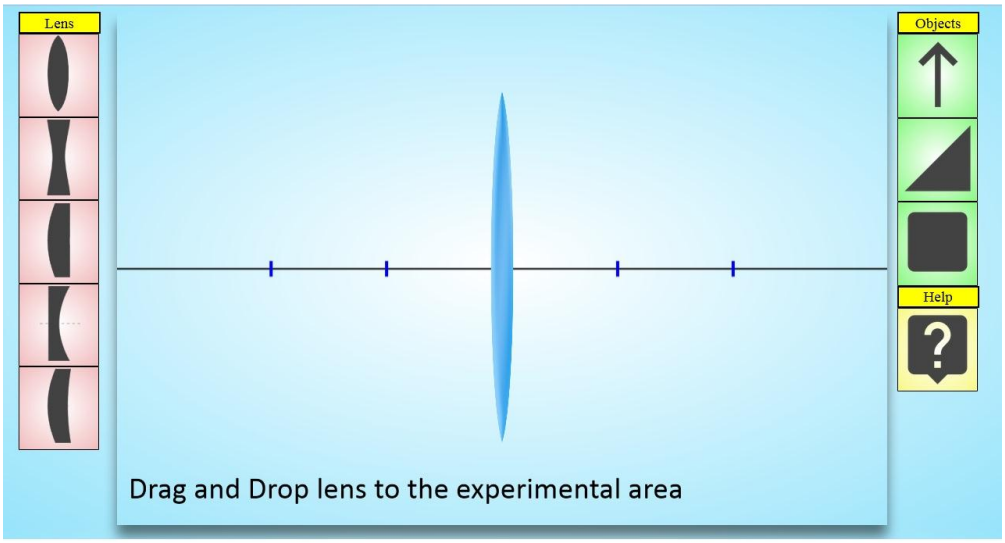
Screen Shots and explanation



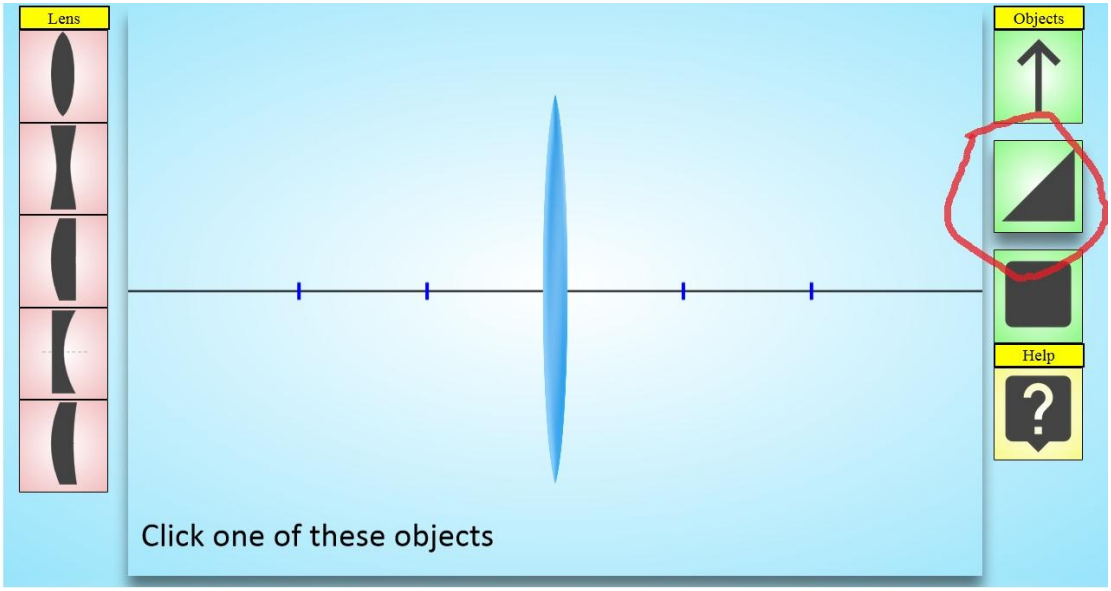
Drag any lens from lens toolbar



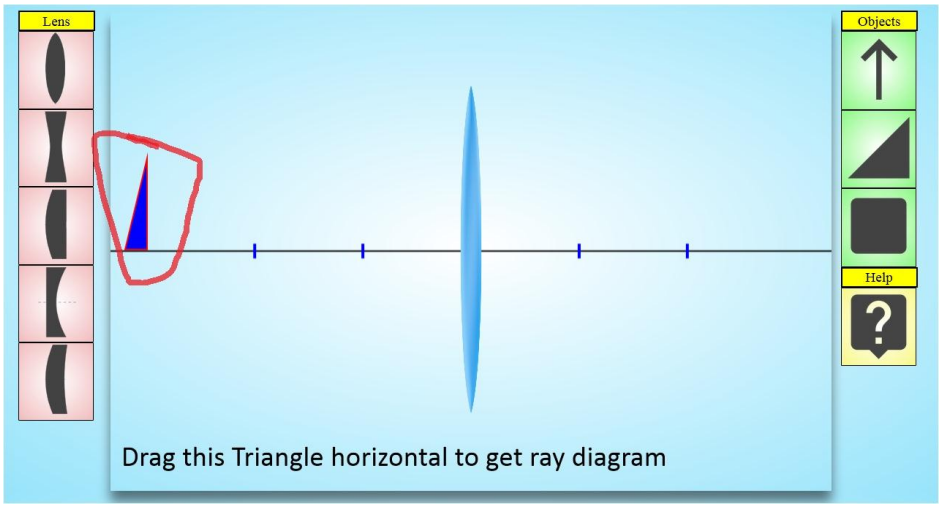
Drop the lens in the experimental area



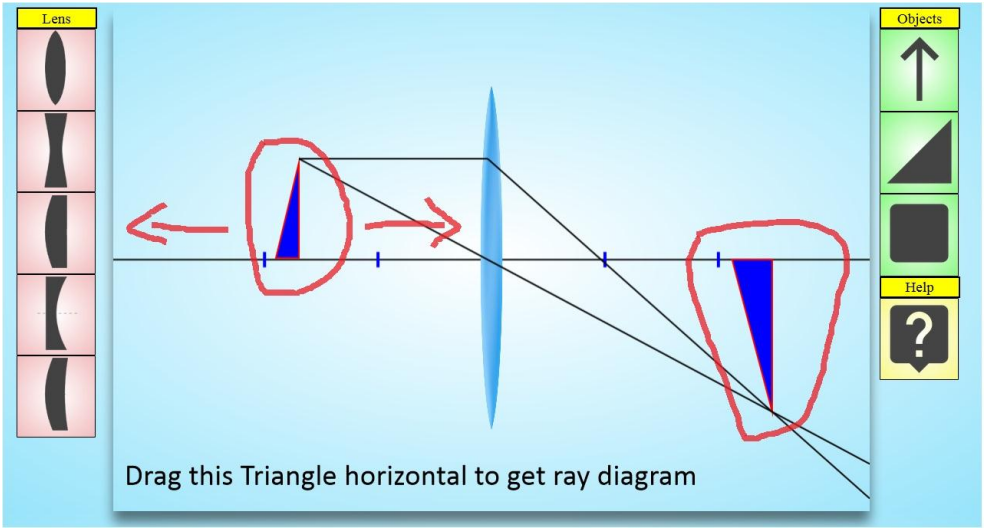
Lens will appear in the experimental area



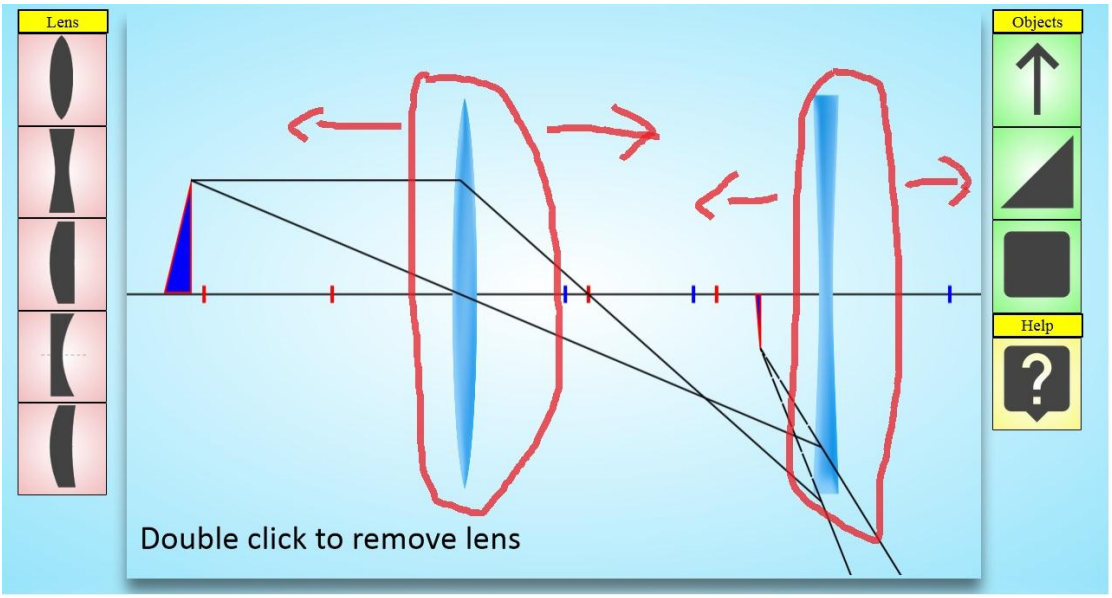
Just click on one of the objects



Selected Object will appear in the experimental Area



If you Drag the object horizontally the image and ray Diagram will appear



You can add second lens also in same time after you added second lens you can drag both lenses and object