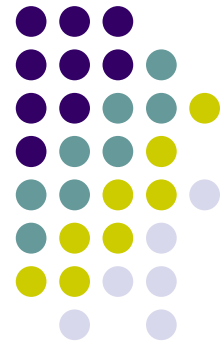


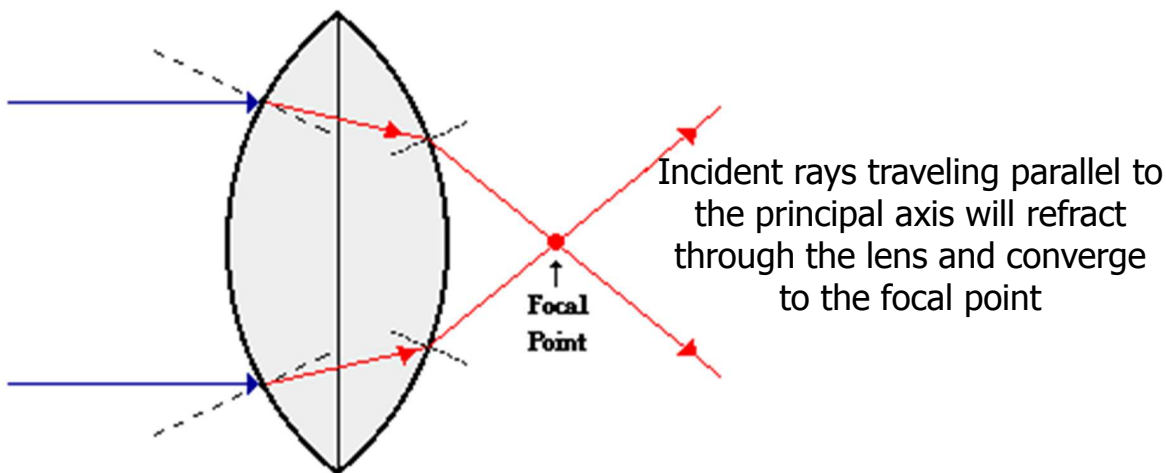
Ray Diagrams for Lenses





Convex (Converging) Lenses

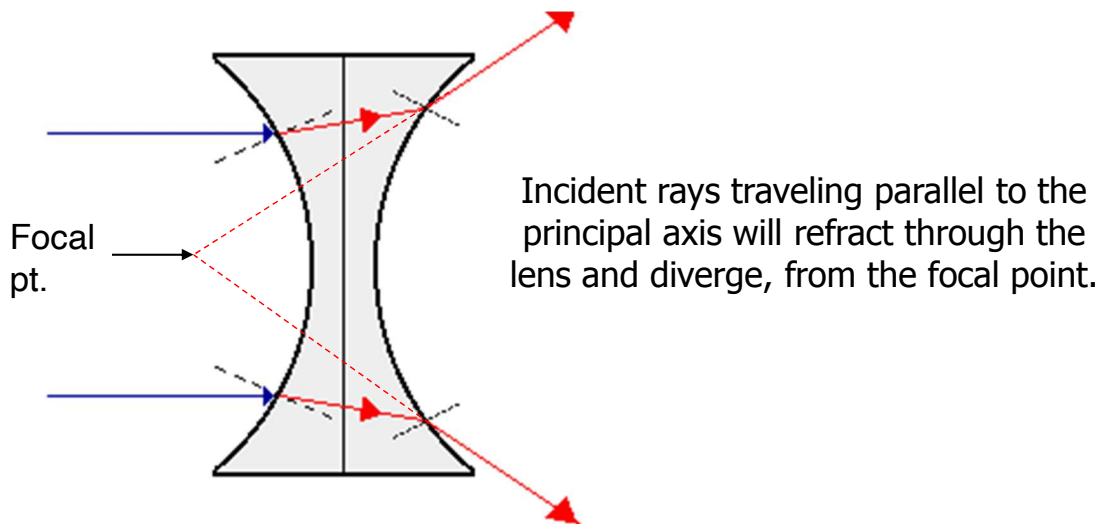
- There are two Focal points
 - One in Front and one Behind
 - Focal point is $\frac{1}{2}$ way between Center of Curvature & Lens





Concave (Diverging) Lenses

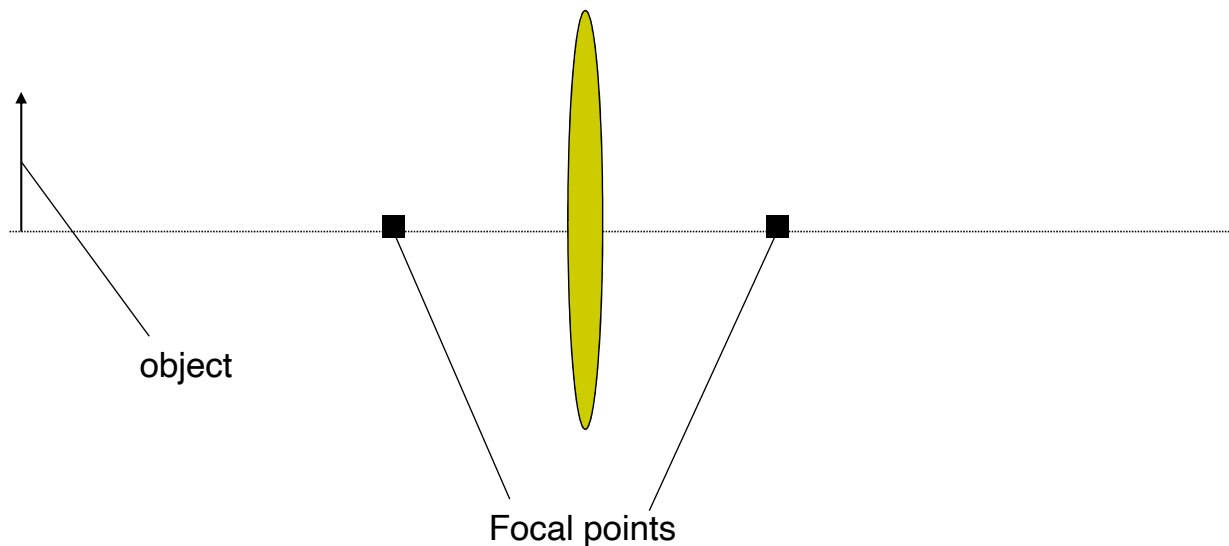
- There are two Focal points
 - One in Front and one Behind
 - Focal point is $\frac{1}{2}$ way between Center of Curvature & Lens





Converging Lenses

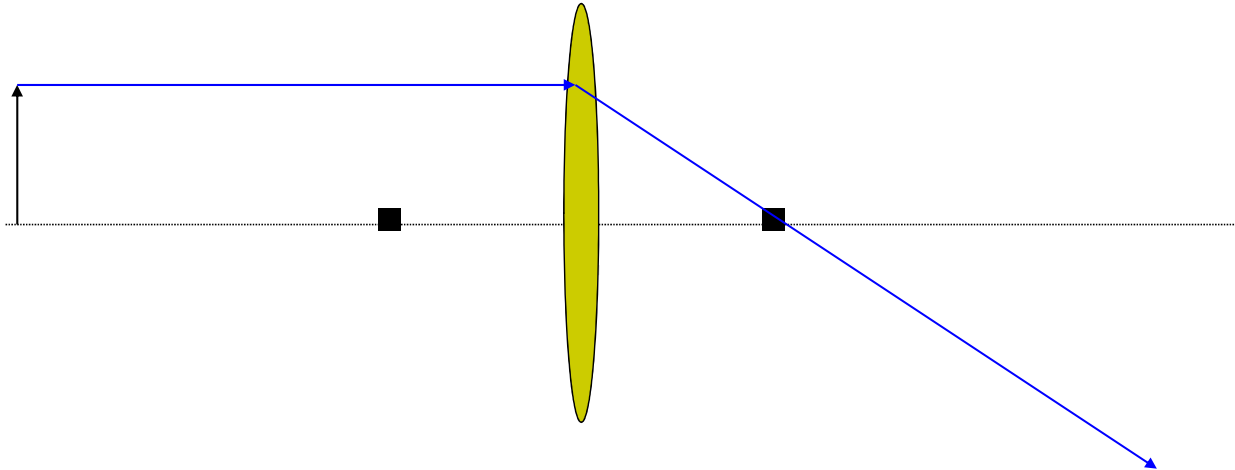
- Object outside the focal point





Converging Lenses

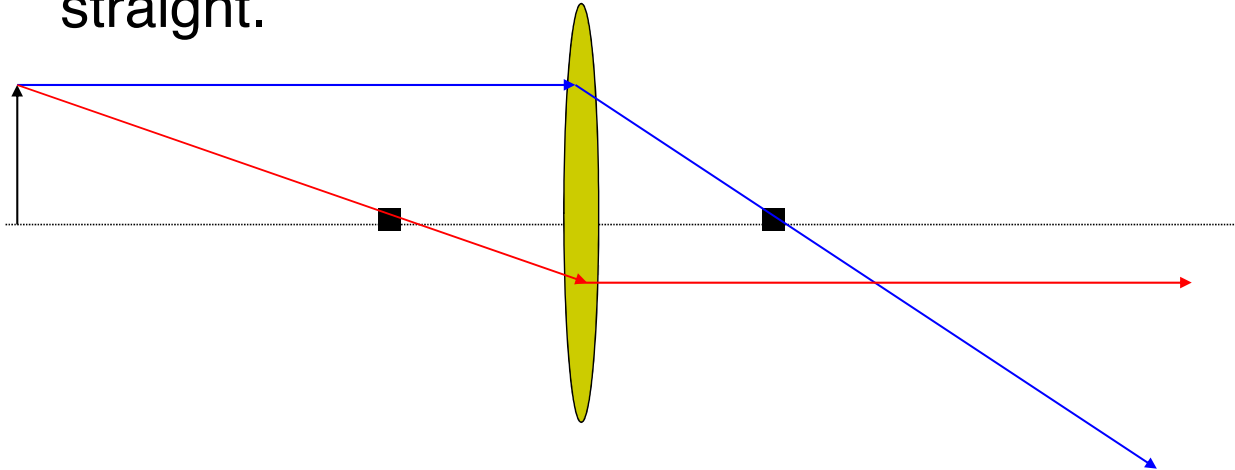
- Step 1, go straight in and bend thru focal





Converging Lenses

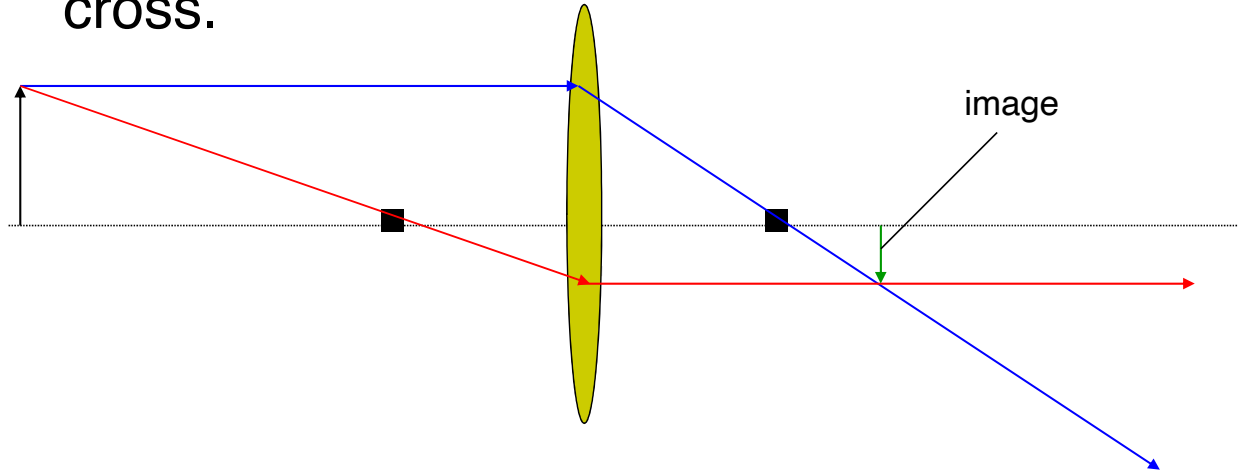
- Step 2, go thru other focal and bend out straight.





Converging Lenses

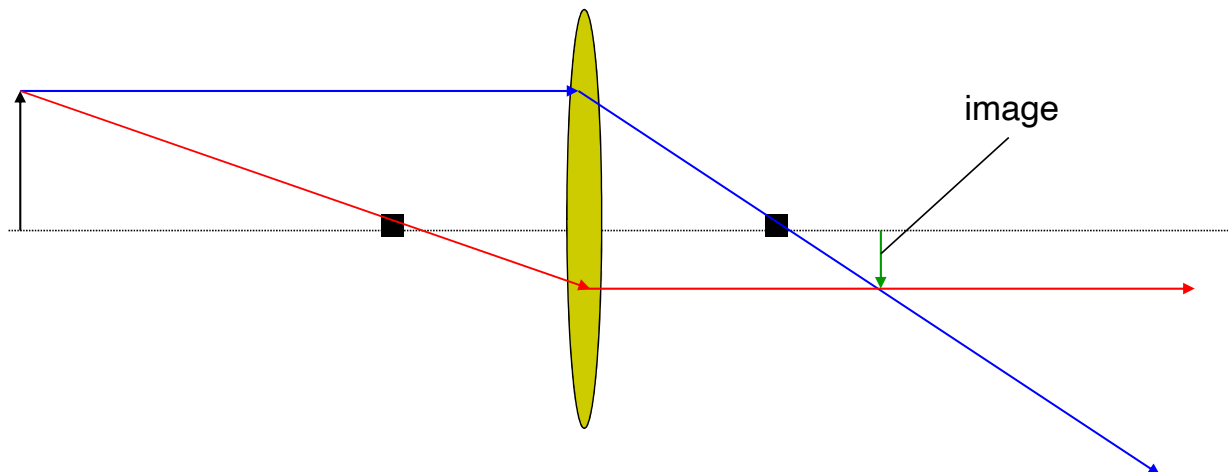
- Image is located where the 2 refracted rays cross.





Converging Lenses

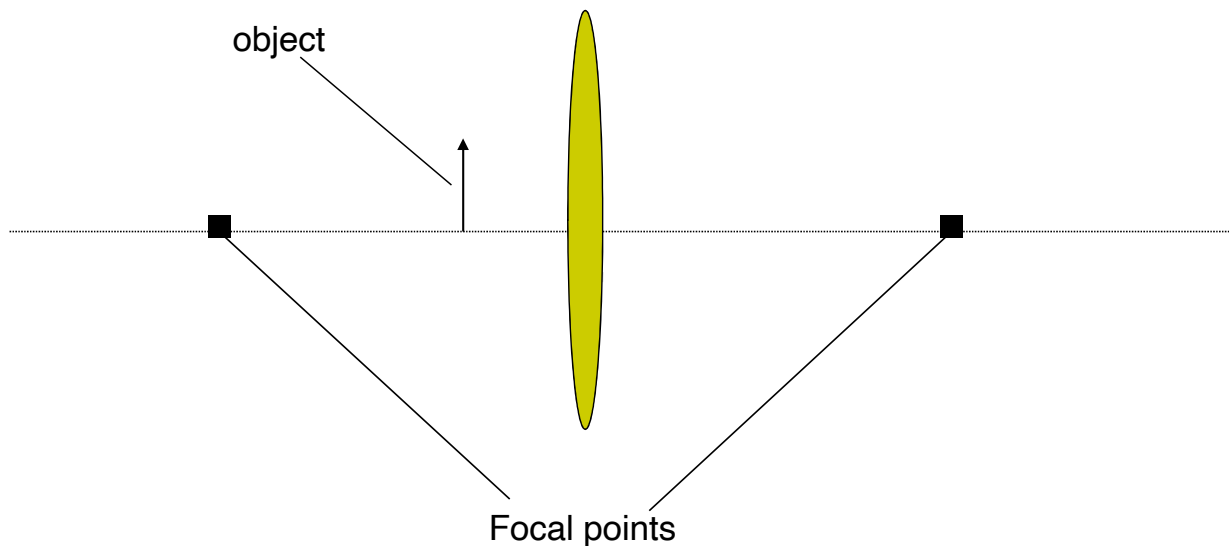
- Image is **REAL**, **INVERTED**, and **SMALLER**





Converging Lenses

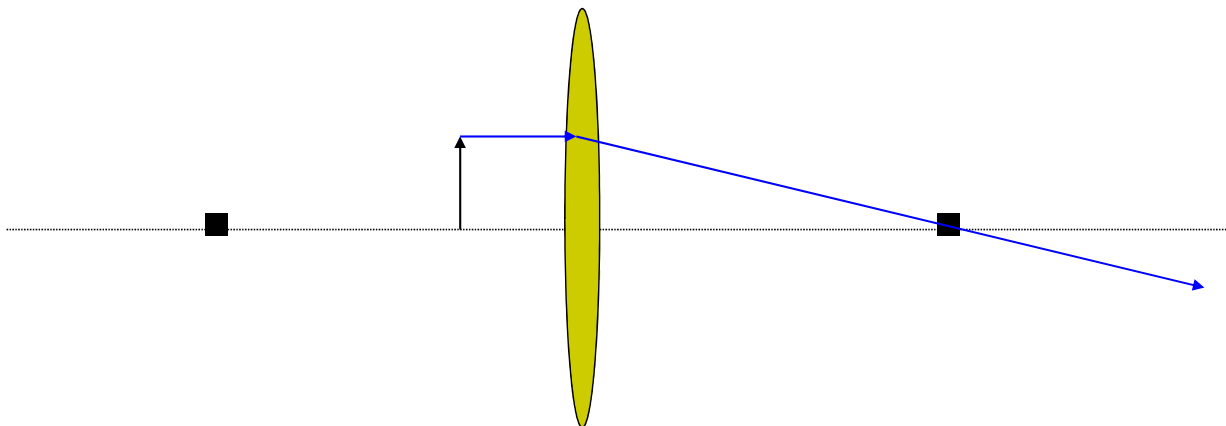
- Object inside the focal point





Converging Lenses

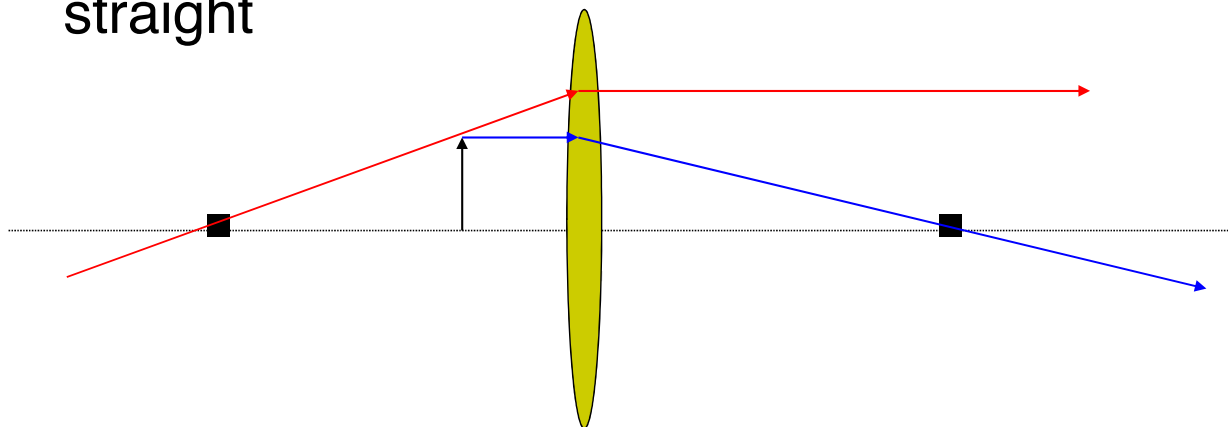
- Step 1-go straight in and bend thru focal pt.





Converging Lenses

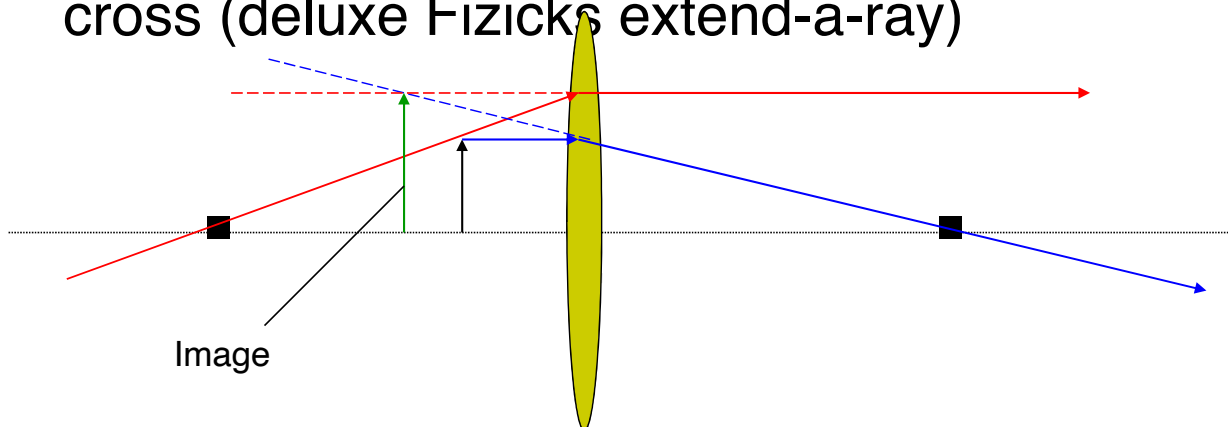
- Step 2-come thru other focal and bend out straight





Converging Lenses

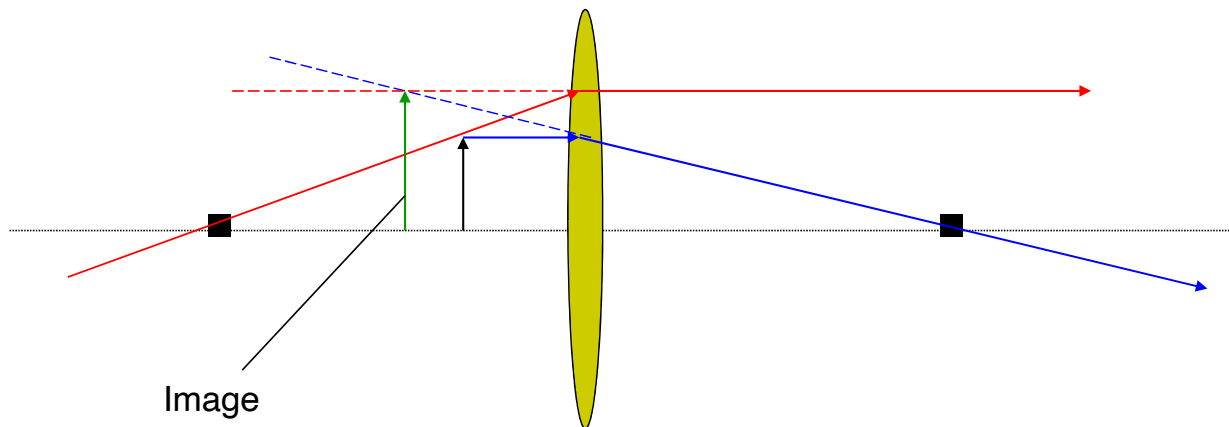
- Image is located where the two refracted rays cross (deluxe Fizicks extend-a-ray)





Converging Lenses

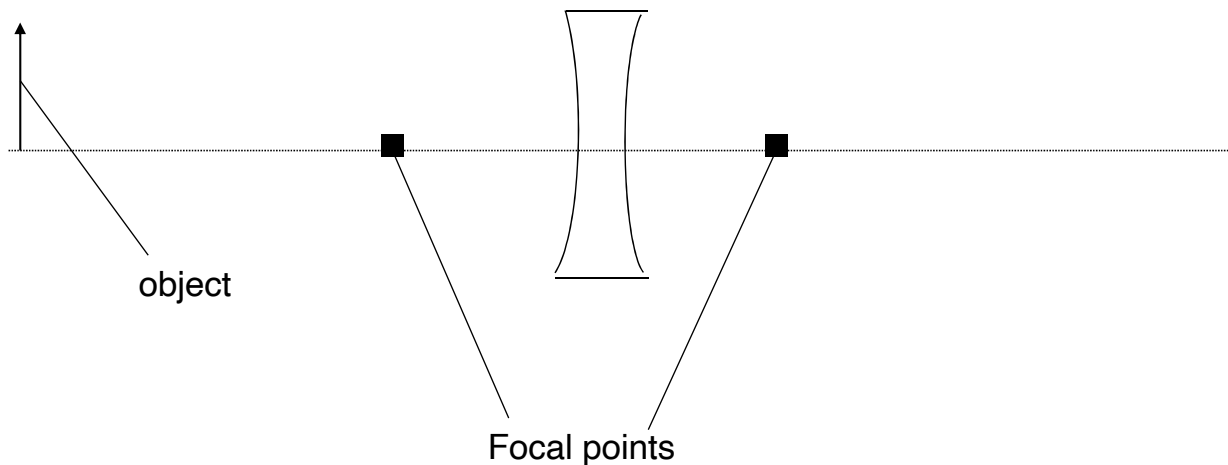
- Image is **VIRTUAL**, **UPRIGHT**, and **LARGER**





Diverging Lenses

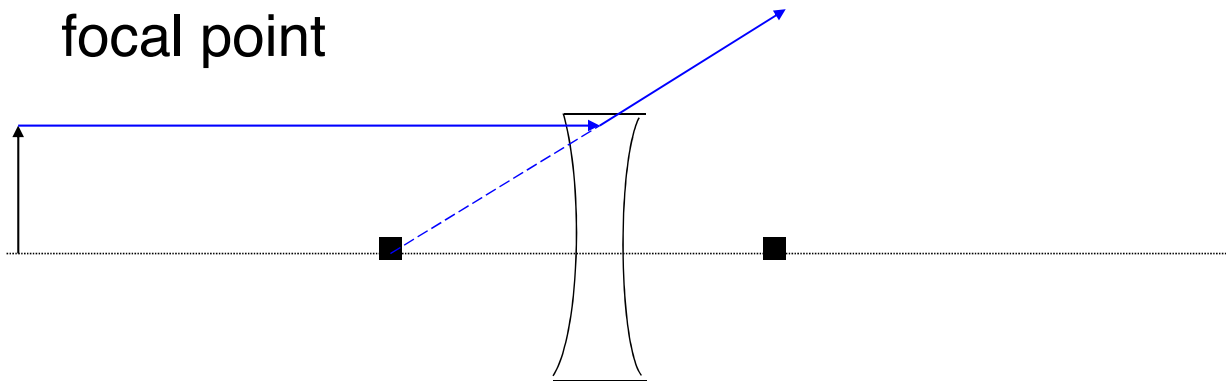
- Object outside the focal point





Diverging Lenses

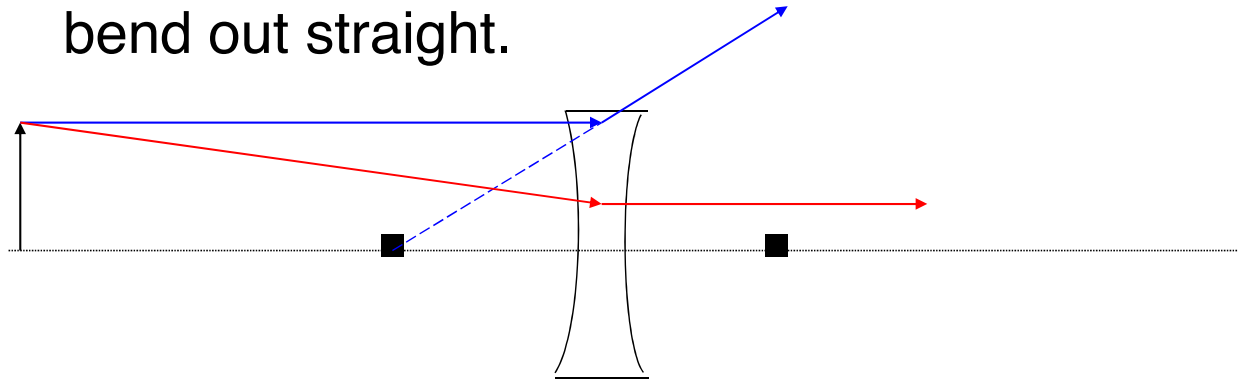
- Step 1-go straight in and bend away from the focal point





Diverging Lenses

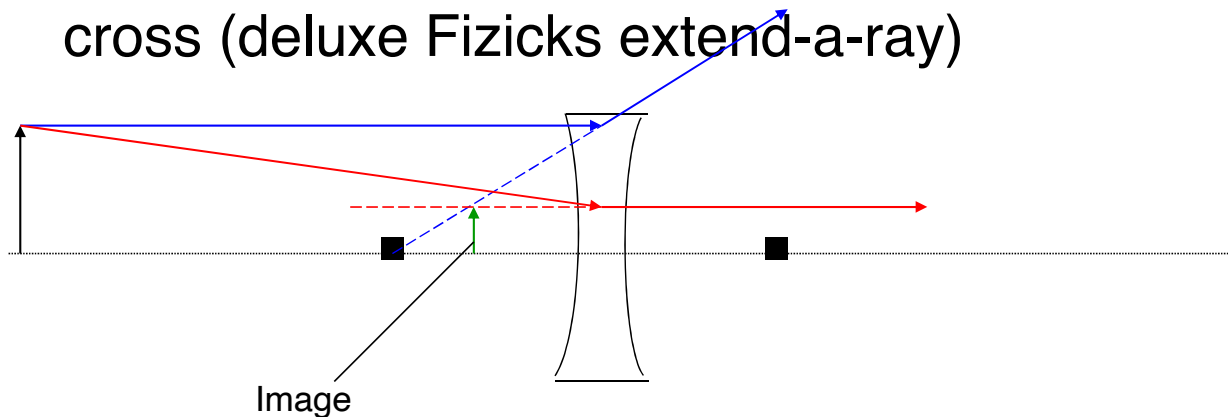
- Step 2-go towards the other focal pt. and bend out straight.





Diverging Lenses

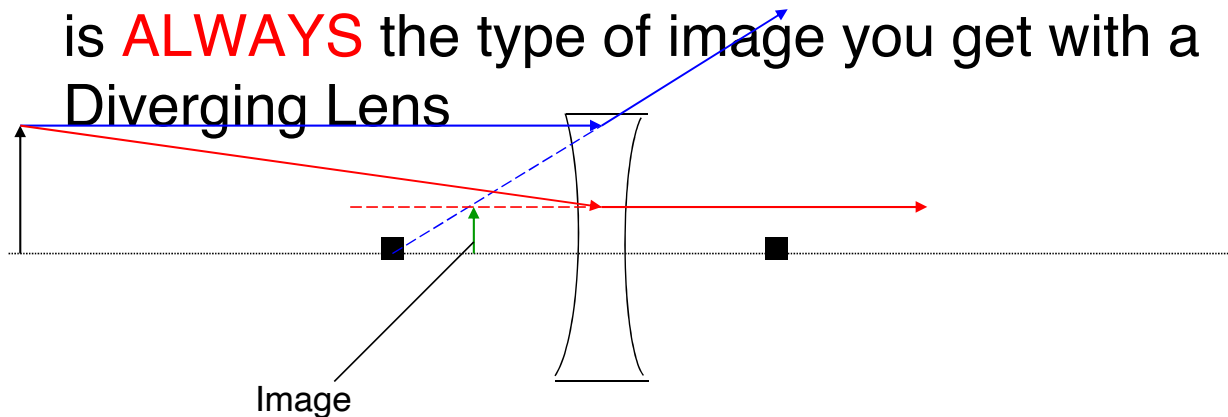
- Image is located where the 2 refracted rays cross (deluxe Fizicks extend-a-ray)





Diverging Lenses

- Image is **Virtual**, **Upright**, and **Smaller**. This is **ALWAYS** the type of image you get with a Diverging Lens



Homework

- Do the ray diagram worksheet

