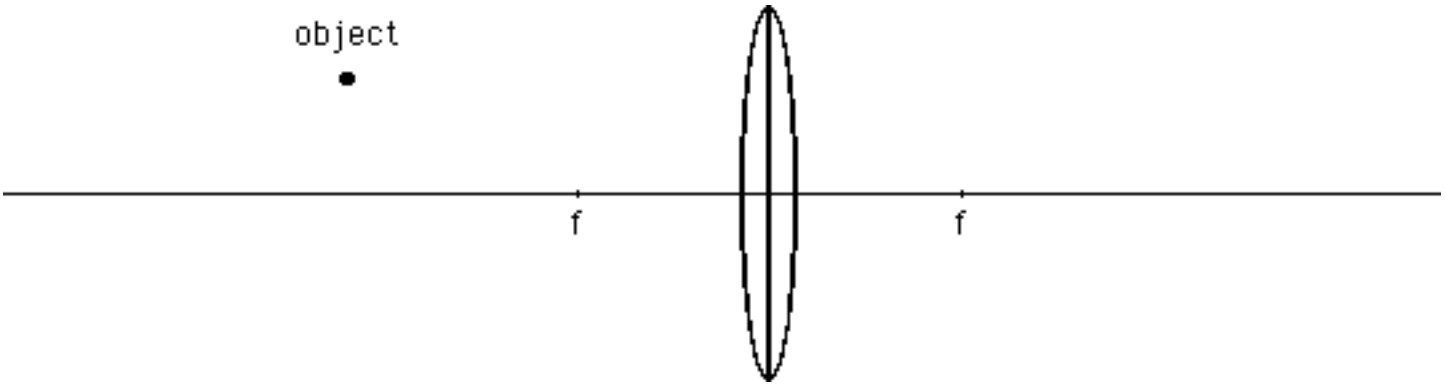
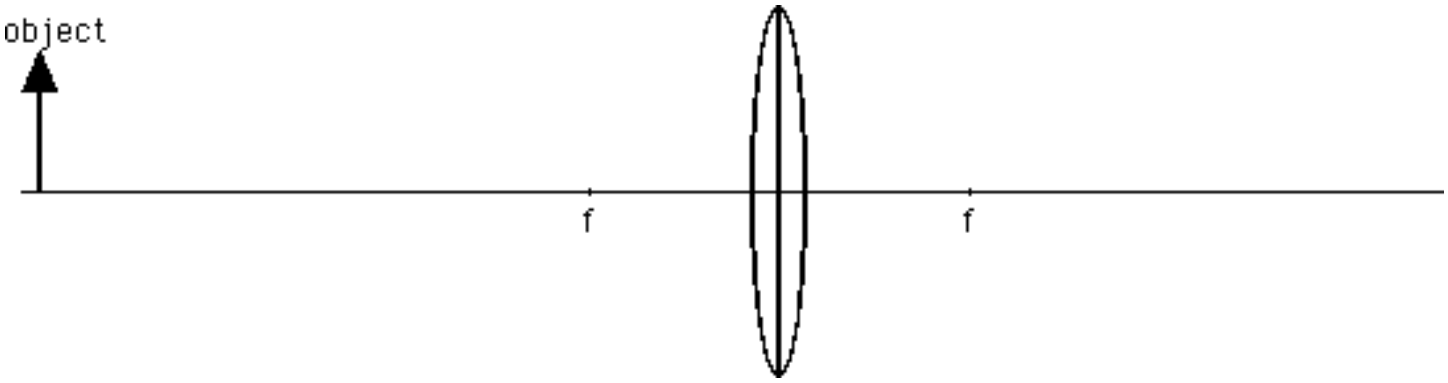
Lenses

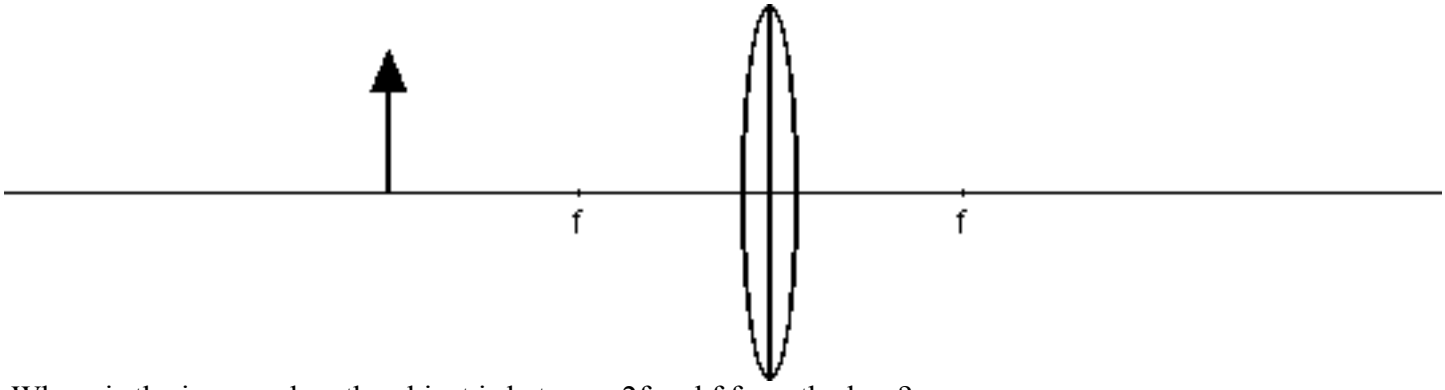
1. Locate the image of the object shown.



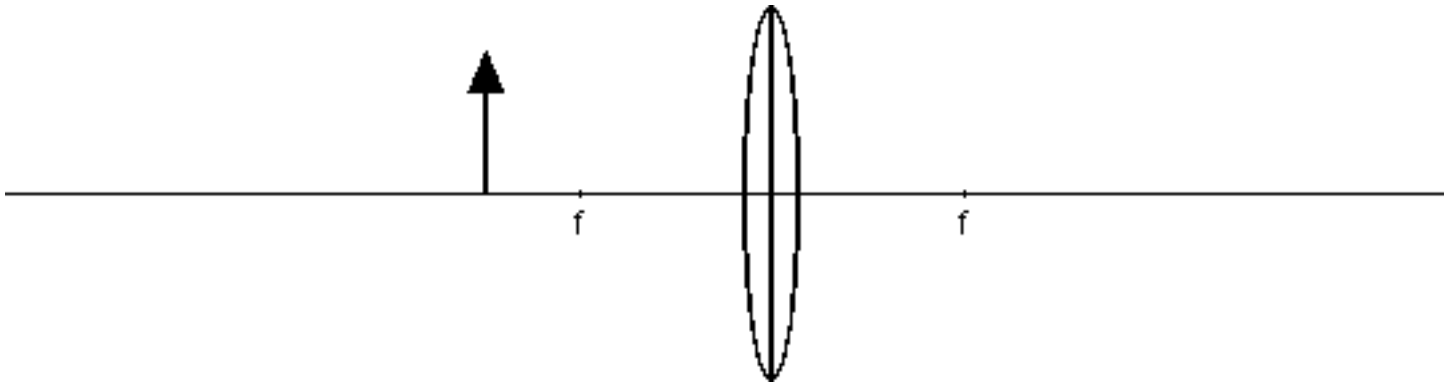
2. Where is the image when the object is far from the lens?



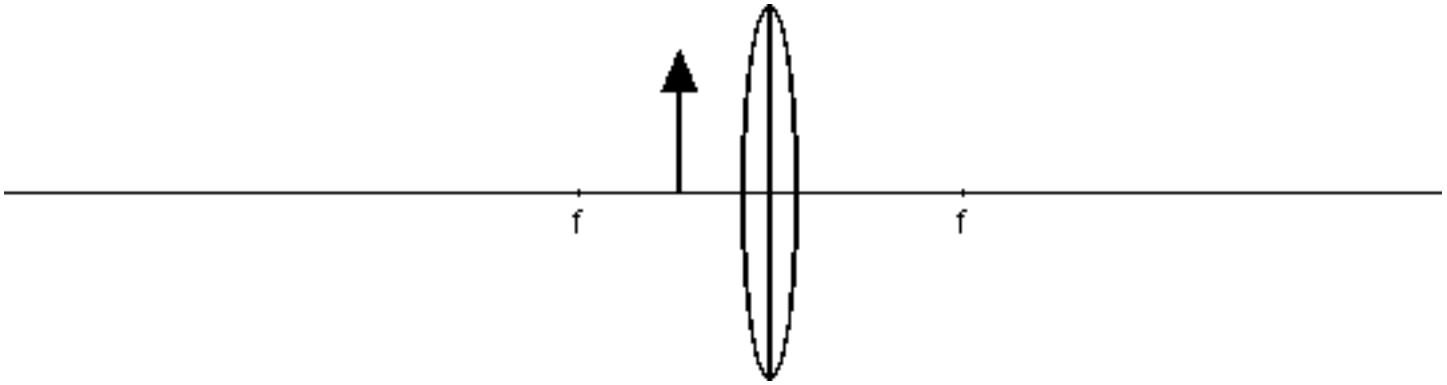
3. Where is the image when the object is twice the focal length (2F) from the lens?



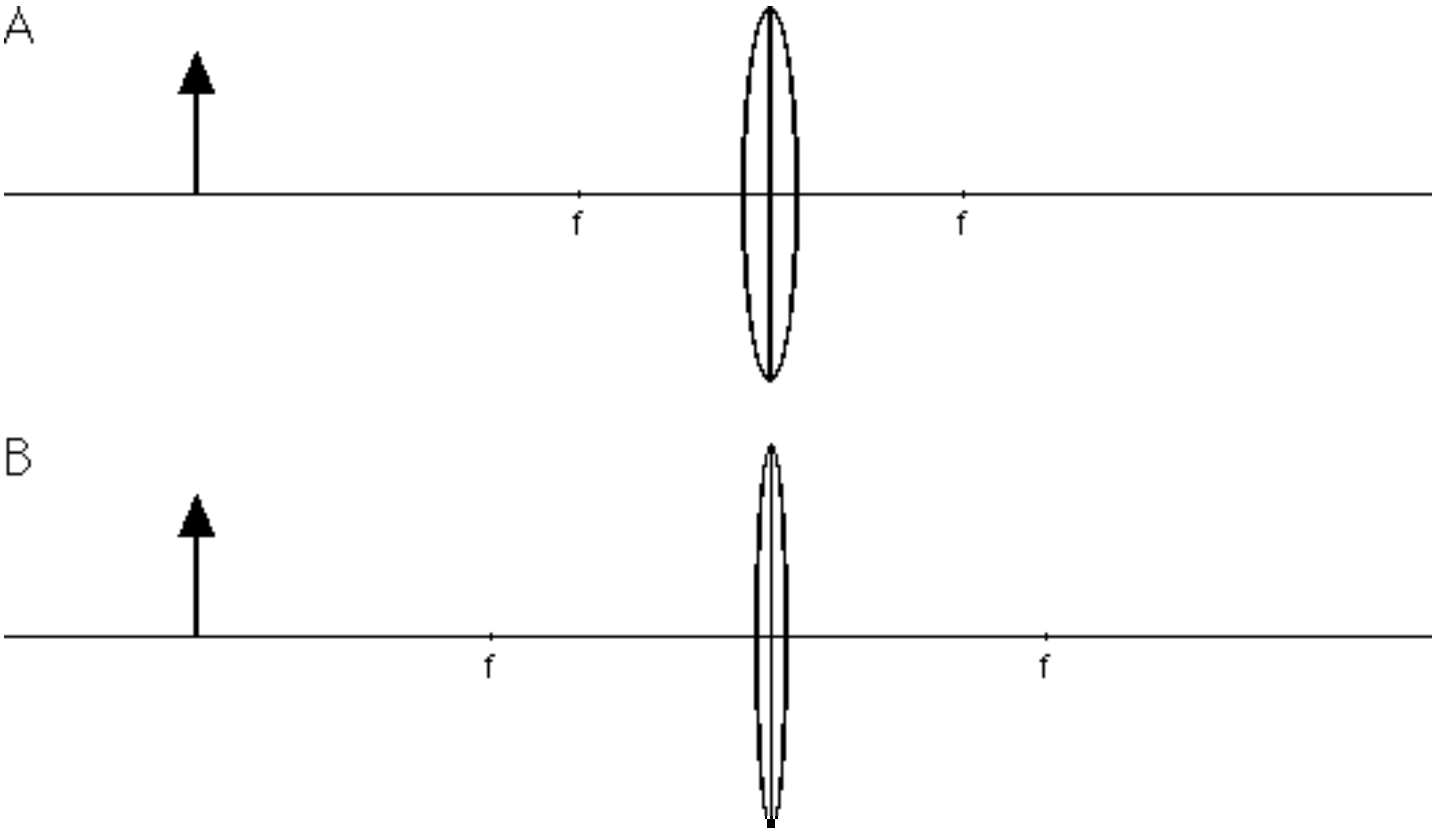
4. Where is the image when the object is between 2f and f from the lens?



5. What happens when the object is between the focal point and the lens?



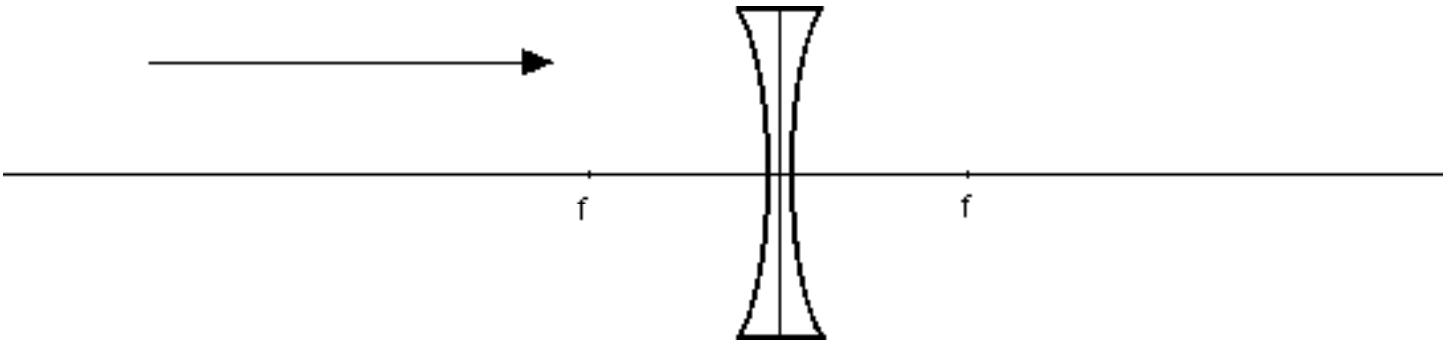
6. What happens when an object is placed the same distance from two different lenses?



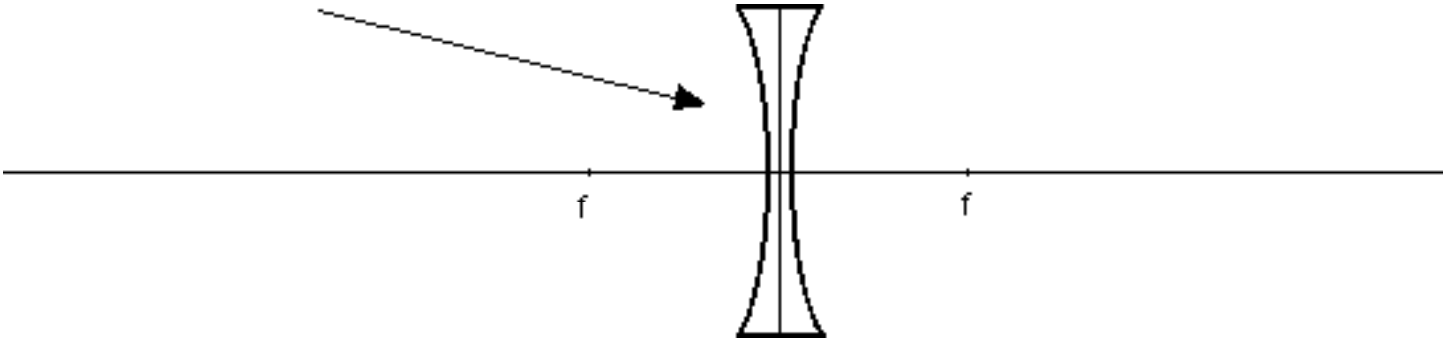
7. Now let us summarize what we have learned so far about the images formed by converging lenses.

Object Location	Image Location	Image size relative to object size	Type of image
beyond "2f" from the lens			
at "2f"			
between "2f" and "f"			
between "f" & the lens			
at the lens			
at infinity			

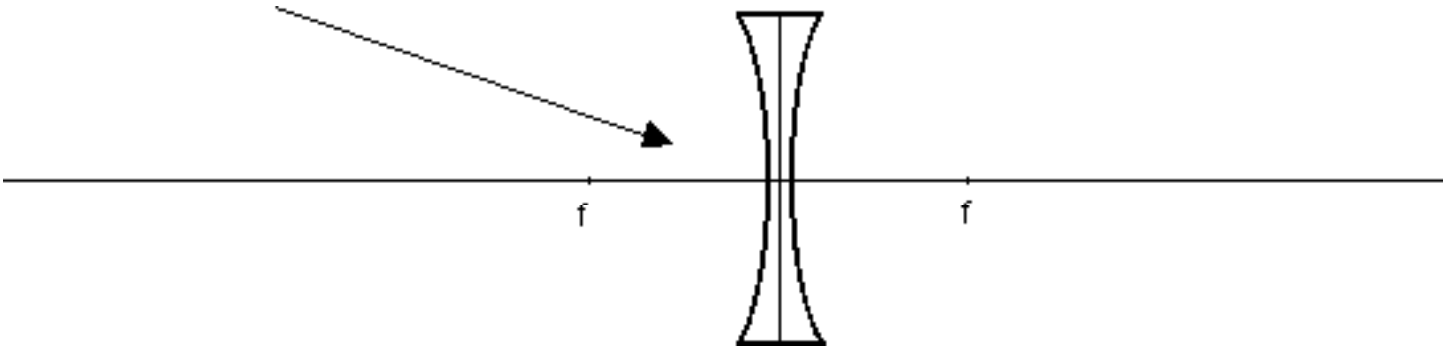
8. A ray of light that approaches the lens **parallel to the principal axis** refracts, diverging as if it came from the first **focal point** (the one on the same side of the lens).



9. A ray of light that is pointing towards the **second focal point** (the one on the other side of the lens) strikes the lens and refracts **parallel to the principal axis**.

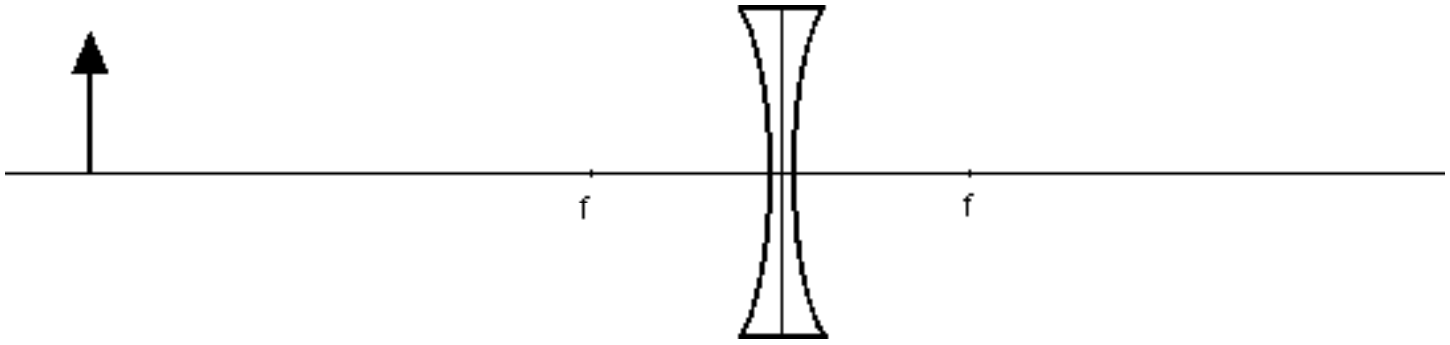


10. A ray of light that passes though the center of the lens is along a **normal** and thus passes **straight through** the lens (does not bend at all).

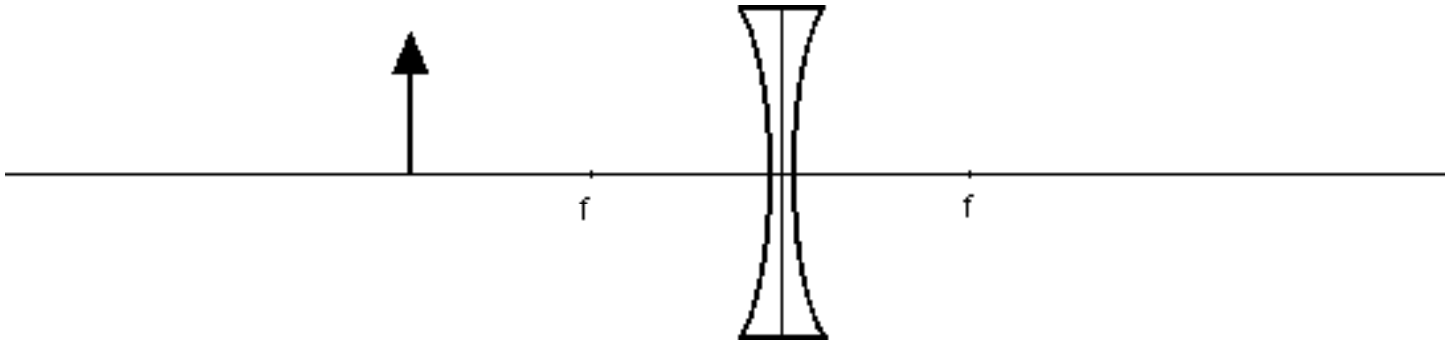


11. Find the images in the following cases where an object is placed in front of a diverging lens.

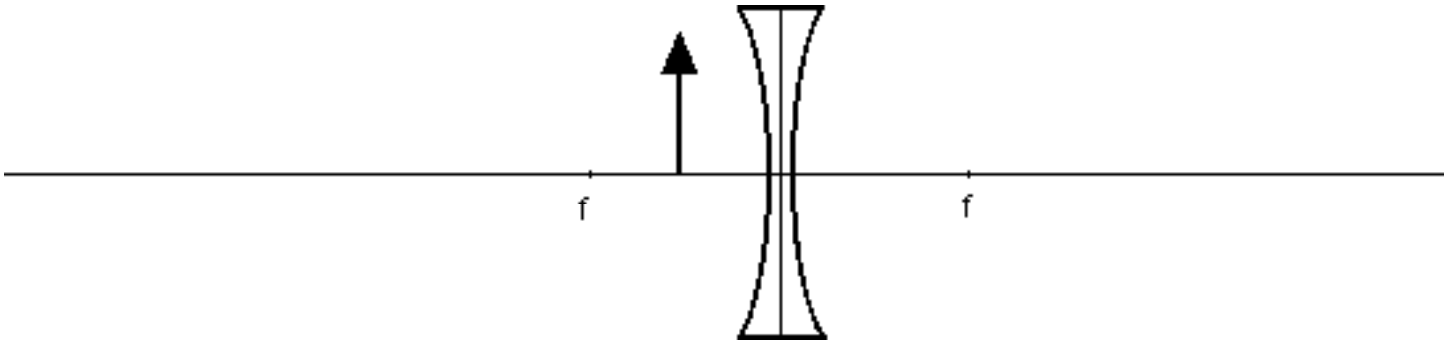
a)



b)

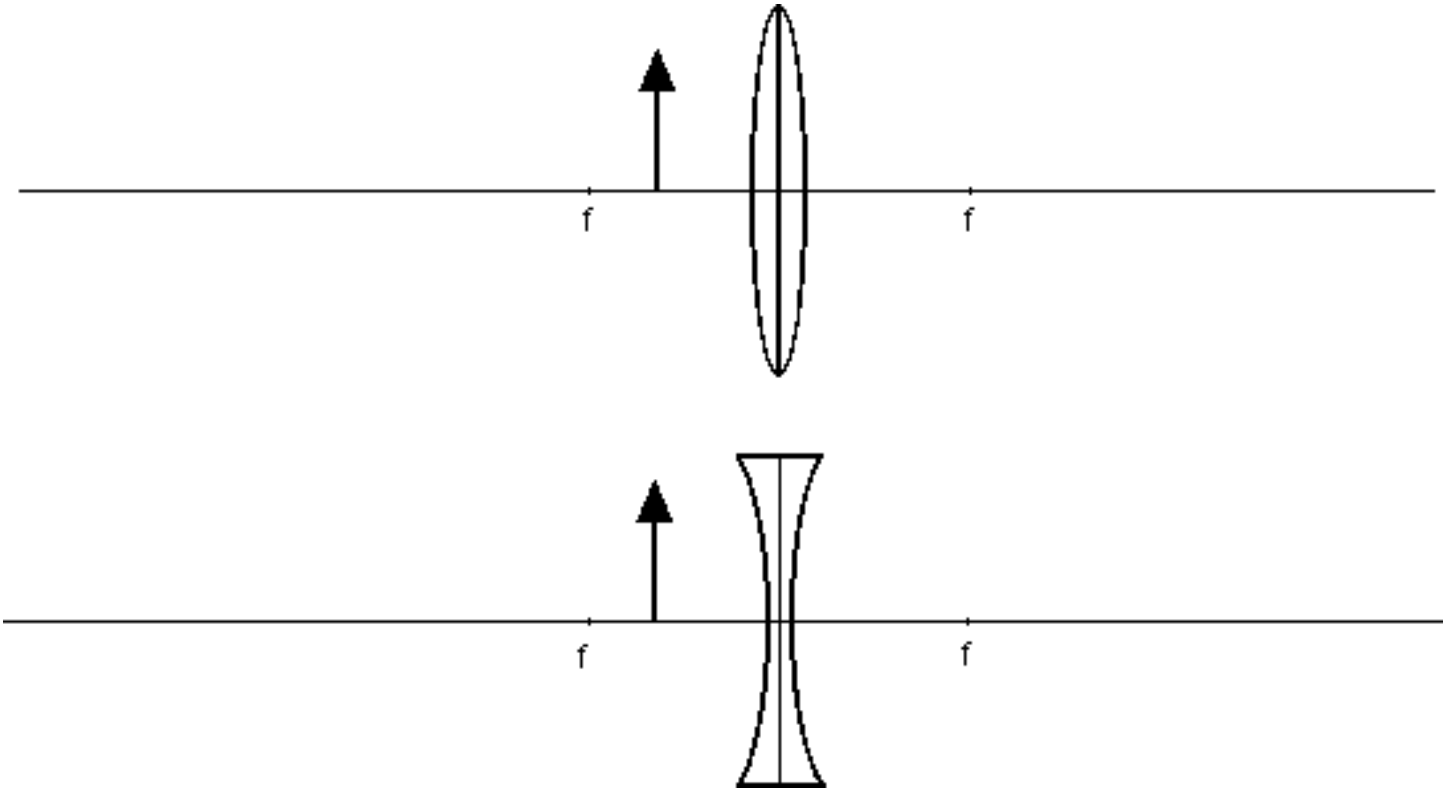


c)



12. What type of image is formed by a diverging lens?__

13. Let us compare virtual images formed by a diverging lens with virtual images formed by a converging lens. Find the image in each case.



14. How are these two images the same?_____

_____

15. How are these two images different?_____

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