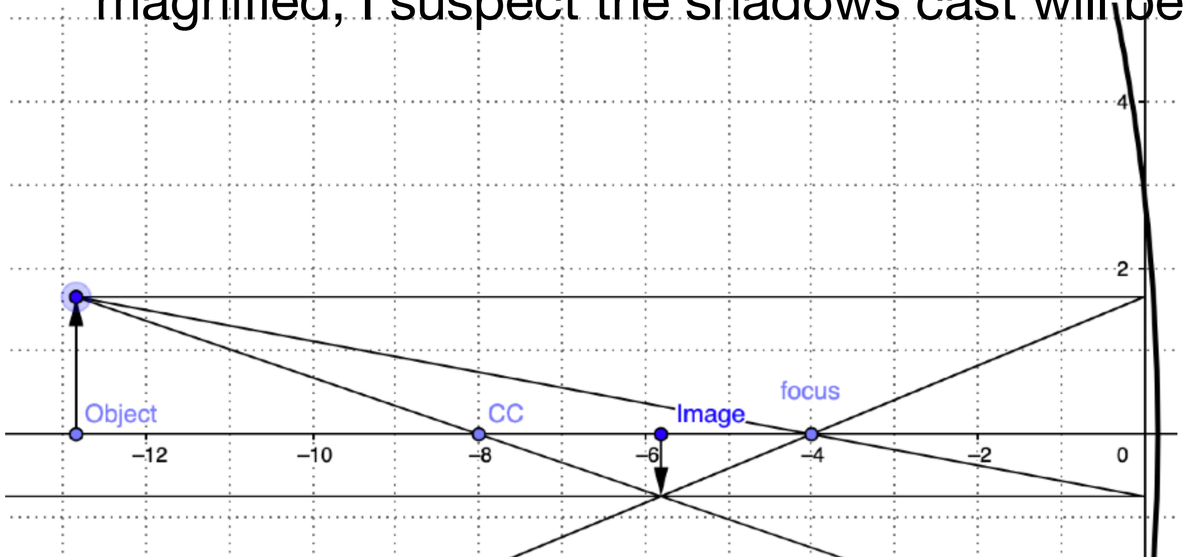
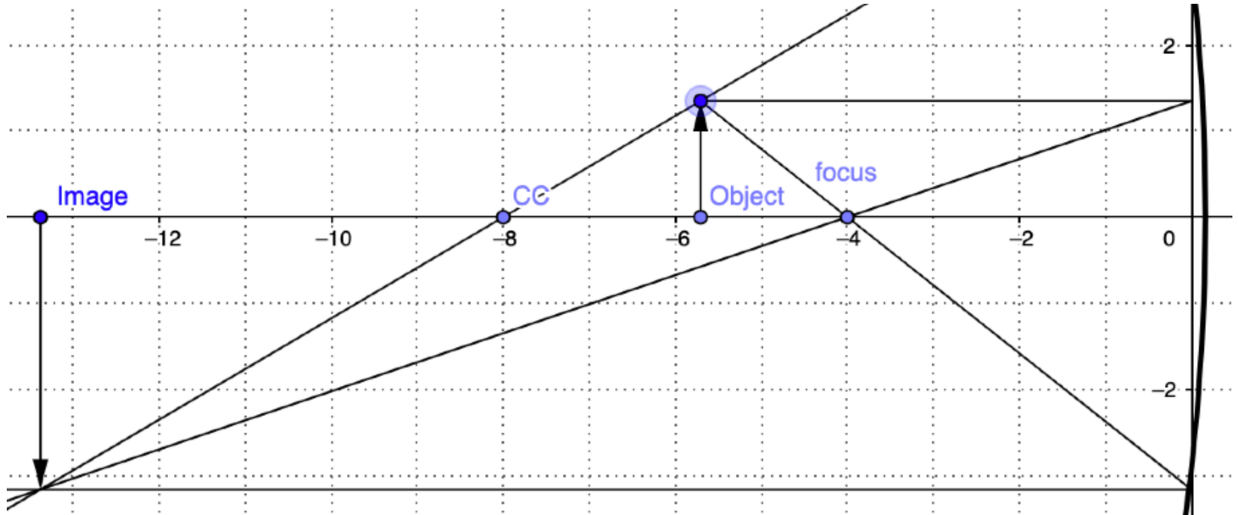
Why 2f for Single-Mirror Configuration?

The knife blade must be placed at the image of the point source. However, why must we require that the image be at 2f—though Schlieren will work despite a different image distance?

<u>If the object is placed after 2f</u>: it is a better approximation that the light is collimated at the mirror. However, the image is small and in-front of the object. Thus, we would require a stronger imaging lens after the knife. Furthermore, the knife will clip some light from the point source.

<u>If the object is placed before 2f</u>: it is a worse approximation that the light at the mirror is collimated. The image appears now after the object and is magnified. Because the image is magnified, I suspect the shadows cast will be less prominent (i.e. less sensitive)





Further Reading

- https://shepherd.caltech.edu/T5/Ae104/Ae104b_handout2015.pdf
- https://www.mathpages.com/rr/s8-04/8-04.htm