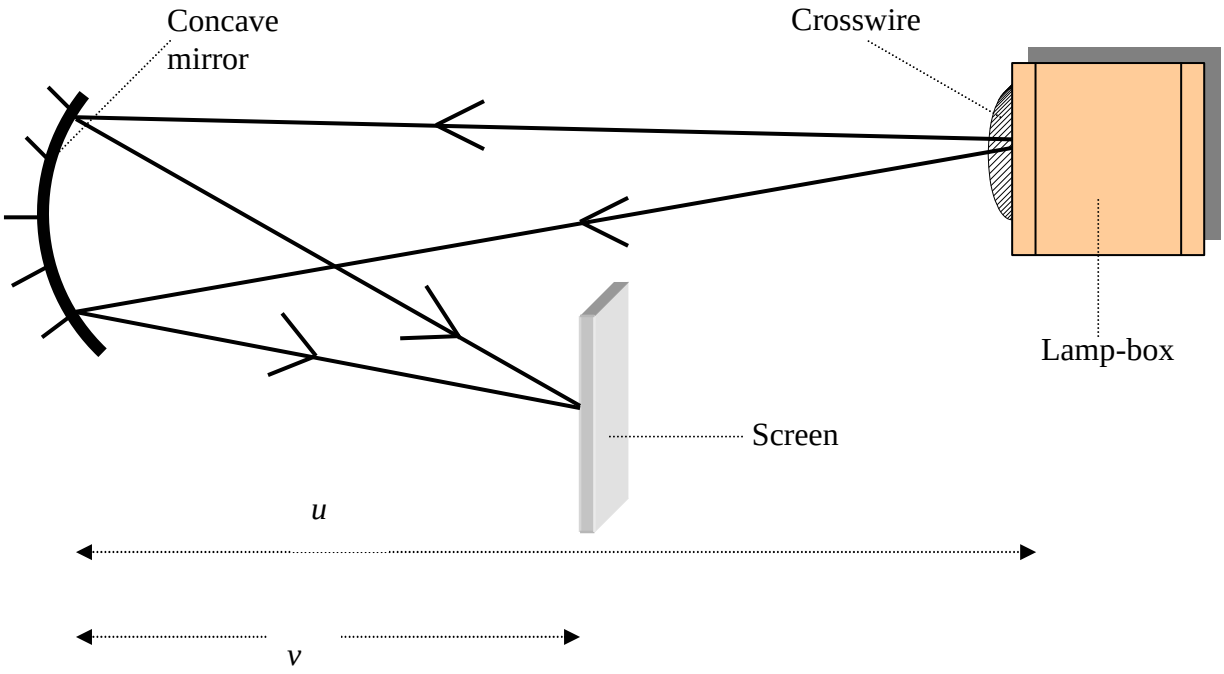
MEASUREMENT OF THE FOCAL LENGTH OF A CONCAVE MIRROR

Apparatus

Concave mirror, screen, lamp-box with crosswire.



Procedure

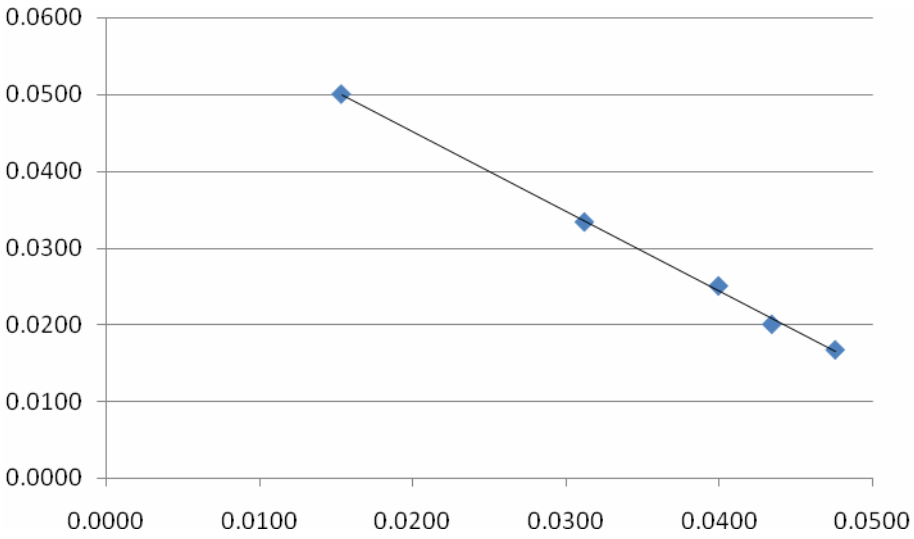
1. Place the lamp-box well outside the approximate focal length - see notes.
2. Move the screen until a clear inverted image of the crosswire is obtained.
3. Measure the distance *u* from the crosswire to the mirror, using the metre stick.
4. Measure the distance *v* from the screen to the mirror.
5. Calculate the focal length of the mirror using $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$.
6. Repeat this procedure for different values of *u*.
7. Calculate *f* each time and then find an average value.

Results

u/cm	$\frac{1}{u}$/cm^{-1}	v/cm	$\frac{1}{v}$/cm^{-1}	f/cm
20	1/20	65	1/65	15.3
30	1/30	32	1/32	15.5
40	1/40	25	1/25	15.4
50	1/50	23	1/23	15.75
60	1/60	21	1/21	15.55

Average f = 77.5 ÷ 5 = **15.5 cm**

Graph



Errors
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Conclusion
The focal length of the Concave Mirror is 15.5 cm.