

VI - 1

$$|m|_{\text{expected}} = f_1/f_2 = 127/18 = 7.06$$

$$|m|_{\text{measured}} = f_1/f_2 = 9/1 = 9\text{mm}$$

$$\sigma_{|m|} = 2\text{mm}$$

$$|m|_{\text{measured}} \pm \sigma_{|m|} = 9 \pm 2 \text{ mm}$$

The values for the determined magnification are similar to each other and the measured value is essentially the same as the expected value.

$$|m|_{\text{expected}} = f_1/f_2 = 127/-22 = 5.77$$

$$|m|_{\text{measured}} = f_1/f_2 = 6/1 = 6$$

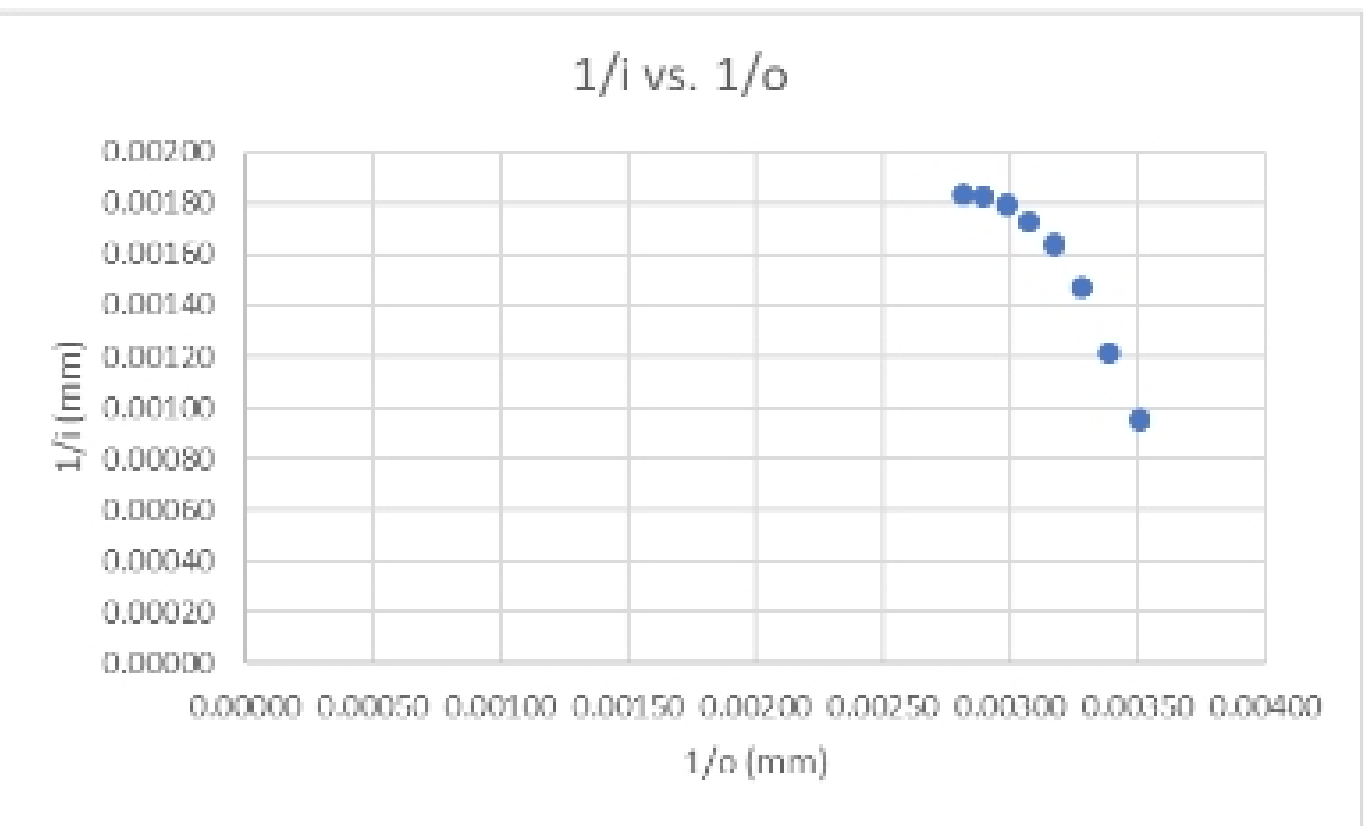
$$\sigma_{|m|} = 2$$

$$|m|_{\text{measured}} \pm \sigma_{|m|} = 6 \pm 2$$

The values are far from each other. This could be the uncertainty being larger than what it is for the measured value.

VI - 2

o (mm)	l (mm)	1/o (mm)	1/l (mm)
285	1050	0.00351	0.00095
285	1047	0.00351	0.00096
285	1051	0.00351	0.00095
295	825	0.00339	0.00121
295	826	0.00339	0.00121
295	826	0.00339	0.00121
305	681	0.00328	0.00147
305	679	0.00328	0.00147
305	680	0.00328	0.00147
315	611	0.00317	0.00164
315	608	0.00317	0.00164
315	609	0.00317	0.00164
325	578	0.00308	0.00173
325	579	0.00308	0.00173
325	578	0.00308	0.00173
335	556	0.00299	0.00180
335	558	0.00299	0.00179
335	559	0.00299	0.00179
345	548	0.00290	0.00182
345	548	0.00290	0.00182
345	547	0.00290	0.00183
355	544	0.00282	0.00184
355	544	0.00282	0.00184
355	544	0.00282	0.00184



$b \pm \sigma_b = 0.0055 \pm 0.0003$

$f = 1/b = 1/0.0055 = 181.81$

$\sigma_f = \sqrt{\left(\frac{\sigma_b}{b}\right)^2} = \sqrt{\left(\frac{0.0003}{0.0055}\right)^2} = 0.054\text{mm}$

$f \pm \sigma_f = 182 \pm 0.05$

VI - 3

$$|m|_{\text{expected}} = f_1/f_2 = 252/48 = 5.25$$

$$|m|_{\text{measured}} = f_1/f_2 = 2.1/.4 = 5.25$$

$$\sigma_{|m|} = 0.15$$

$$|m|_{\text{measured}} \pm \sigma_{|m|} = 5.25 \pm 0.2$$

The measured value is on point to the expected value without the uncertainty. With the uncertainty the value is slightly farther away than the expected value, but it is still close to it.