Option C – Guidance for Practical 1

Determination of magnification using an optical bench

Safety

Although great care has been taken in checking the accuracy of the information provided in this guidance, Cambridge University Press shall not be responsible for any errors, omissions or inaccuracies.

Teachers and technicians should always follow their school and departmental safety policies. You must ensure that you consult your employer's model risk assessments and modify them as appropriate to meet local circumstances before starting any practical work. Risk assessments will depend on your own skills and experience, the skills and experience of your students, and the facilities available to you. Everyone has a responsibility for his or her own safety and for the safety of others. The notes below should not be regarded as a risk assessment.

You should carry out the practical yourself before presenting it to students. Make sure you are comfortable with the procedures, and can anticipate any difficulties your students may encounter.

Guidance

Students will practice using the optical bench, using lenses to form images and determining magnification.

Apparatus and materials

Each group will need:

- optical bench
- light source
- object
- lens
- screen

Setting up the practical

If an optical bench is not available, a metre rule could be used with adhesive putty to place the object and lens into position, and a flat white surface can be used as a screen.

Answers to questions

1 Theoretically yes, but due to experimental errors these are not usually equal.

2 Students should use the lens equation, $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$, and their measurements of u and v to determine the focal length f.