



General Certificate of Education
Advanced Subsidiary Examination
June 2010

Physics

PHY3T/P10/task

Unit 3 Investigative and Practical Skills in AS Physics
ISA (P) Refraction

Task Sheet

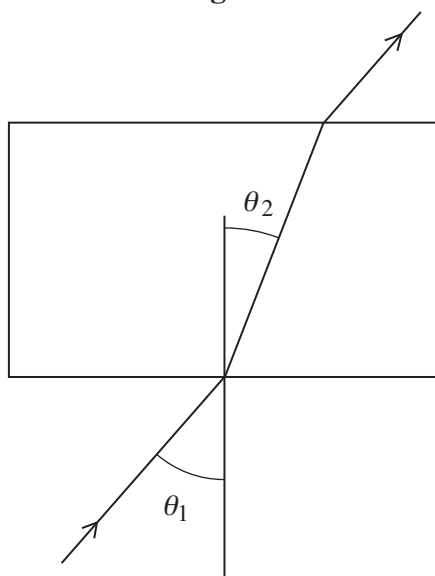
This task is worth 10 marks

You are advised to read through these instructions before beginning your work.

You are going to investigate the refraction of light by a rectangular glass or Perspex block.

- Place the block on the paper and draw round its outline.
- Set up the apparatus so that a narrow beam of coloured light passes through the block.
- Draw the path of the beam through the block as shown in **Figure 1**.
- Using a protractor, measure the angle of incidence, θ_1 , and the angle of refraction, θ_2 , at the first surface.
- Take a set of readings for various values of the angle of incidence within the range 20° to 60° .
- Using the second sheet of paper, repeat the measurements for the same angles of incidence.
- Tabulate all your results in a single table.
- Record the precision of your protractor.
- Calculate $\sin\theta_1$ and $\sin\theta_2$ for each angle of incidence and include these values in your table.
- Plot $\sin\theta_2$ on the y-axis against $\sin\theta_1$ and draw the straight line of best fit.

Figure 1



After the investigation

At the end of the investigation, please hand in all your written work, including the graph and both sheets of paper used for tracing the rays, to the supervisor.

This documentation will be required for Stage 2 of the ISA. Please ensure that you have entered your centre details, candidate number and name on all the sheets you have completed.