Note:

The triangular card is right-angled.

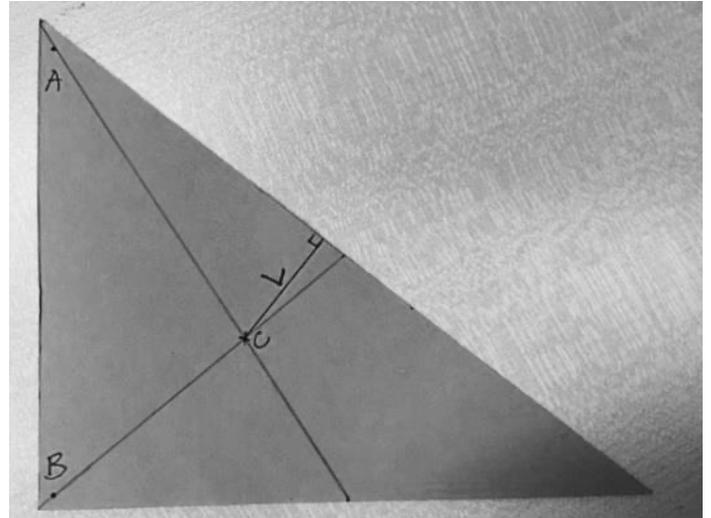The dimensions: about 10.4 cm x 12.6 cm

(i)
- **Two lines were drawn** from their holes respectively.
- **All 3 points** **A**, **B** and **C** on card are labelled.
- **Length L** on card indicated clearly.

Record of L

L = 2.7 cm $\pm$ 0.2 cm   [check d.p.!]

(depends on actual dimensions of card)

Note: *elaborate on your answers; any point already stated in the procedure is not acceptable!*

Questions:

1 Write down **two** precautions when conducting the experiment.

- Make sure the card is able to swing freely when suspended on the optical pin.
- Make sure that the plumbline is not rubbing against the card and can swing freely.

  [*or any other reasonable precautions*.]

Note: *Parallax error is not acceptable at 'O' level unless the practical is designed such that the error is significant!*

2 Write down **two** significant sources of error in the experiment.

- There is human judgment error in tracing the plumbline on the card due to thickness of thread.
- Some material on the card is lost when pushing the pin through the hole, altering the location of the centre of gravity.
- The triangular card is not completely flat when suspended on the optical pin.

  [*or any other reasonable source of error*.]

3   Suggest two ways to check that **C** is the centre of gravity of the card.

- Conduct the experiment again with a third hole on the card. If the third traced line still passes through the intersection of the first 2 lines, then CG is marked accurately.
- Support the card with a sharp object (e.g. a pin or pen tip) at C. If the card is balanced horizontally, then C should be the centre of gravity of the card.
- Make a hole at C and widen it. Support the card vertically by inserting a horizontal pin. If the card does not rotate when released at any position, C is the CG [neutral equilibrium].