NANYANG GIRLS' HIGH SCHOOL
Sec 3 Physics Practical

Marking Scheme P06 Centre of Gravity

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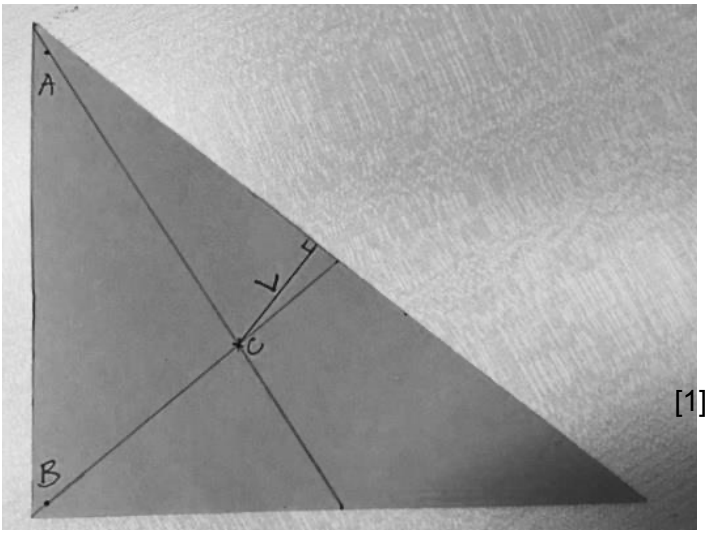
Note:

The triangular card is right-angled.

The dimensions are about 10.4 cm x 12.6 cm.



Triangular card:

a) **Two lines were drawn** from their holes respectively. [1]

b) **Label all 3 points A**, **B** and **C** on card. [1]

c) **Indicate** clearly the **length L** on card. [1]

Record of L [1]

The values of L is **2.7 cm ± 0.2 cm**.

(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. [2]

- Make sure the card is able to swing freely when suspended on the optical pin. [1]
- Make sure that the plumbline is not rubbing against the card and can swing freely. [1]

[***or*** *any other reasonable precautions*.]

(Note: Parallax error no longer acceptable at 'O' level SPA unless the practical is designed such that the error is significant)

2 Write down **two** possible sources of error in the experiment. [2]

- There is human judgment error in tracing the plumbline on the card due to thickness of thread. [1]
- Some material on the card is lost when pushing the pin through the hole, altering the location of the centre of gravity. [1]
- The triangular card is not completely flat when suspended on the optical pin. [1]

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

3 Suggest two ways to check that **C** is the centre of gravity of the card. [2]

- Conduct the experiment again with a new hole on the card. If the third traced line still passes through the intersection of the first 2 lines, then the two lines are marked accurately. [1]
- Support the card with a sharp object (e.g. a pin) at C. If the card is balanced horizontally, then C should be the centre of gravity of the card. [1]
- Make a hole at C and widen it. Support the card vertically using a horizontal pin. If the card does not rotate when released at any position, C is the CG [neutral equilibrium].