Motion

Mark Scheme

Level	IGCSE
Subject	Physics
Exam Board	CIE
Topic	General Physics
Sub-Topic	Motion
Paper Type	Alternative to Practical
Booklet	Mark Scheme

Time Allowed: **24 minutes**

Score: **/20**

Percentage: **/100**

1 **(a) (i)** 1 m–2.5 m [1]

(ii) 10 cm–1 m but h must be less than $l/2$ [1

(b) any three from:
- making marks / lines on track for start and finish
- repeats / find average time
- constant starting positions
- not pushing car
- time from same point on car
- use light gates / data logger / automatic timer for timing
- method for avoiding parallax error when judging finishing point / stand level with finish [max 3]

[Total: 5]

2 **(a) (i)** (as θ increases) d increases (to a maximum at 40° / between 40° and 50° / between 30° and 40°) then decreases [1]

(ii) both in range 15 to 35 (cm)

(b) any suitable means of detecting d more easily, e.g. any one from:
- sand tray
- use of carbon paper
- ink on ball
- fixing rule to floor
- use of video
- reference to releasing ball remotely
- mark approximate point and repeat to confirm [1]

(c) repeats owtte [1]

qualification or detail regarding repeats, e.g. repeat at each value of θ / repeat and take an average / take more sets of readings / repeat for θ values between those given in table [1]

[Total: 5]

3 **(a** graph: axes labelled and scales suitable [1]
all plots correct to nearest ½ small square [2]
well judged best fit line [1]
thin best fit single line/no 'blobs' [1]

(b) statement matches line (expect YES) [1]
justification matches statement
(expect straight line through origin) [1]

(c) triangle method with more than half the line used [1]
clear how obtained – shown on graph [1]
m correct in kg, 2 or 3 significant figures [1]
1.39 – 1.45 kg - unit penalty

[Total: 10]