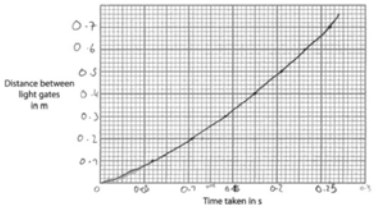
# Mark Scheme (Results)

## January 2022

Pearson Edexcel International GCSE

In Physics (4PH1) Paper 1PR and (Science Double Award) (4SD0) Paper 1PR

| Question number | Answer | Notes | Marks |
|---|---|---|---|
| 10 (a) (i) | substitution into $a = \Delta v / t$;<br>evaluation to 3 or more s.f.;<br><br>e.g.<br>acceleration = (4.20 – 1.45) / 0.286<br>(acceleration =) 9.62 ($m/s^2$) | | 2 |
| (ii) | idea that air resistance / friction also acts on ball;<br>which opposes the ball's weight; | allow drag<br>allow idea that frictional force is upwards whilst weight is downwards<br>allow idea that resultant force is less that weight<br>ignore idea of reaction time / other human errors | 2 |
| (iii) | substitution into $v^2 = u^2 + 2 \times a \times s$;<br><br>rearrangement;<br>evaluation;<br><br>e.g.<br>$4.20^2 = 1.45^2 + (2 \times 9.6 \times s)$<br>$s = (v^2 - u^2) / 2a$<br>(s =) 0.809 (m) | allow use of a=9.6, 9.8, 9.81 or 10<br><br>reject 'change in speed × time' giving 0.78(65) as incorrect physics<br>allow answers using correct average velocity.<br><br>allow range 0.78-0.81 (m) | 3 |
| (b) (i) | suitable scale on both axes;<br>all points plotted correctly to nearest half square;<br>  <br> | | 2 |
| (ii) | smooth curve drawn with an even distribution of data points either side; | ECF candidate plotting | 1 |
| (iii) | gradient of graph is equal to the speed / velocity of the ball;<br>gradient is increasing (as time increases);<br><br>speed / velocity is increasing (as time increases); | <br>allow "curve gets steeper"<br>allow idea of greater distance in a unit of time<br>DOP<br><br>award 1 mark for idea that graph is a curve if no other marks awarded | 3 |

**Total for Question 10 = 13 marks**