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(a) the distance travelled by the ball during the first 0.40 s,

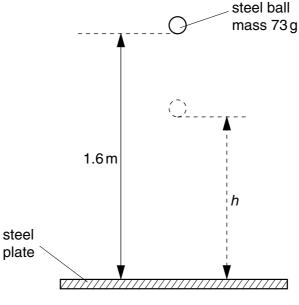


Fig. 4.1

The ball is dropped from rest and it bounces on the plate, reaching a height *h*.

(a) Calculate the speed of the ball as it reaches the plate.

speed =
$$\dots m s^{-1}$$
 [2]

- **(b)** As the ball loses contact with the plate after bouncing, the kinetic energy of the ball is 90% of that just before bouncing. Calculate
 - (i) the height h to which the ball bounces,

	(ii) the speed of the ball as it leaves the plate after bouncing).
	speed =	m s ⁻¹ [4]
(-)	(a) Hainer common to (a) and (b) determine the change	Service of the bell
(c)	(c) Using your answers to (a) and (b), determine the change during the bounce.	in momentum of the ball
	change =	Ns [3]
(d)	(d) With reference to the law of conservation of momentum, to (c).	comment on your answer
		[3]
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Distinguish between the <i>mass</i> of a body and its <i>weight</i> .
mass
weight
[4]



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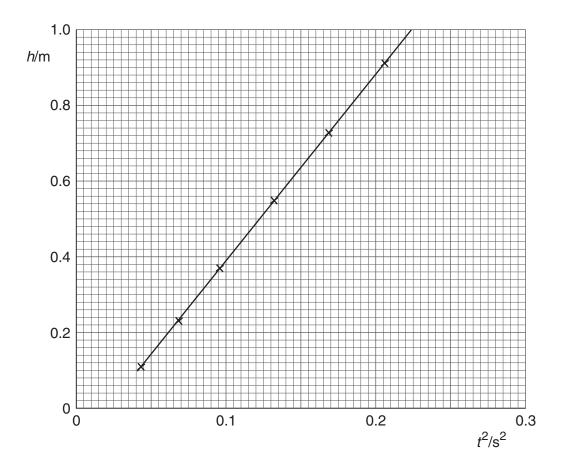


Fig. 2.2

(a) Use Fig. 2.2 to calculate a value for g, the acceleration of free fall of the ball. Explain your working.

$$g = \dots m s^{-2}$$
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(b) Identify one possible source of random error in the determination of g and suggest how this error may be reduced.

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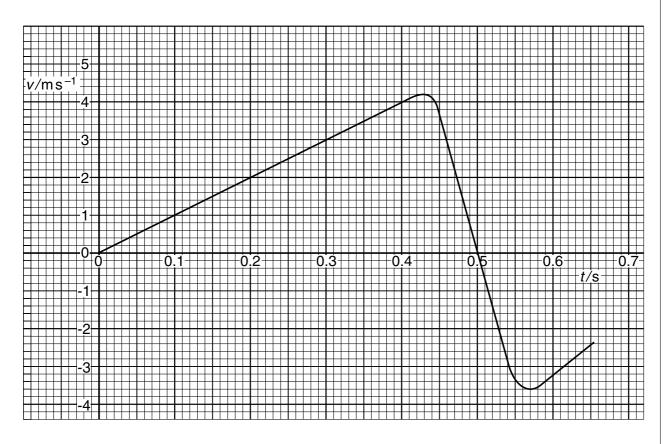


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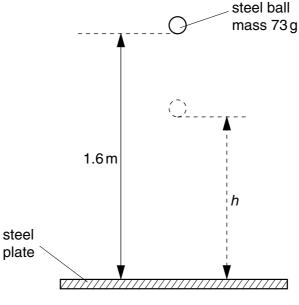


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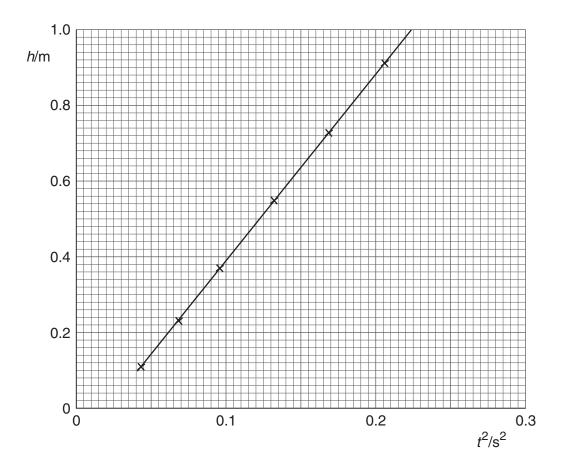


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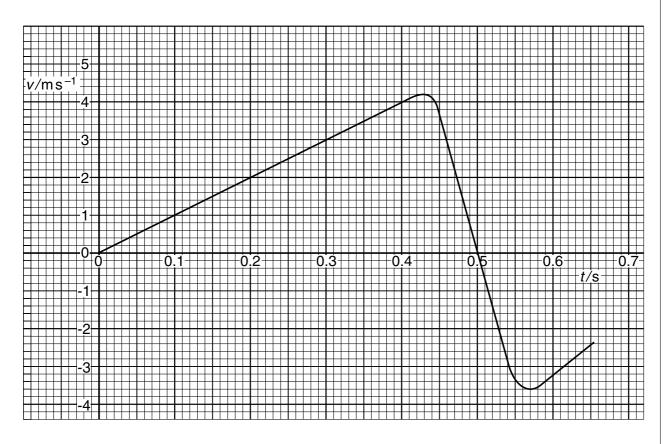


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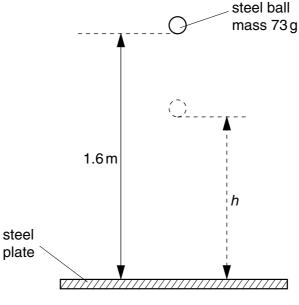


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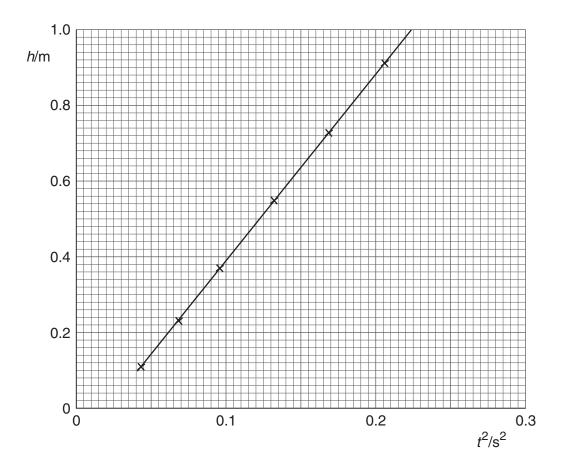


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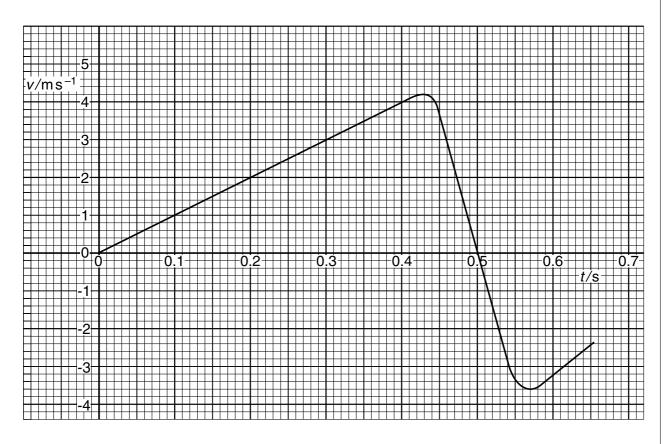


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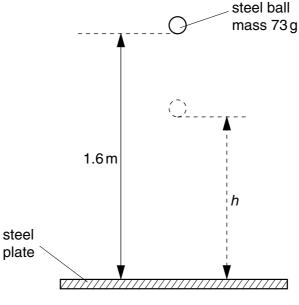


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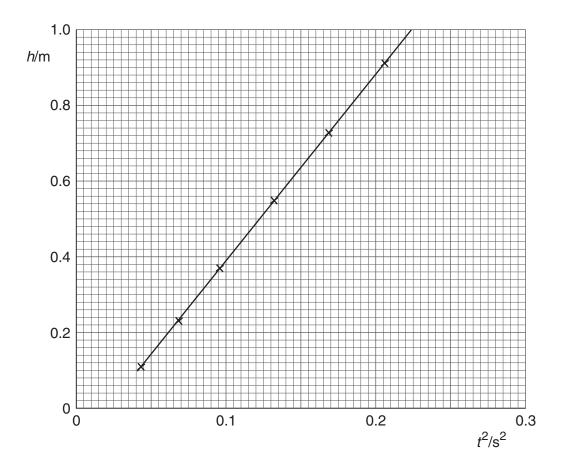


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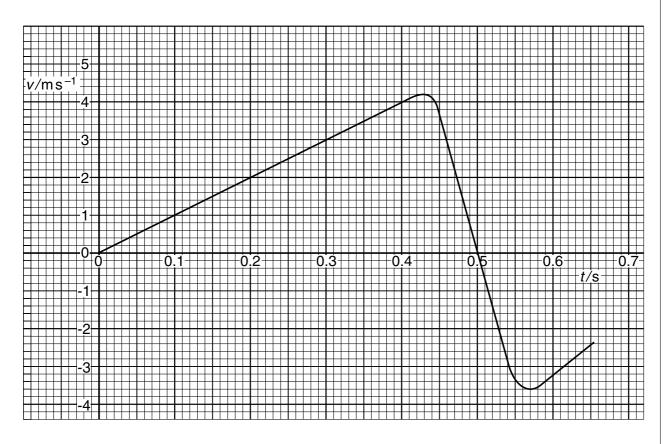


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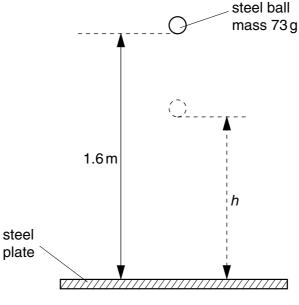


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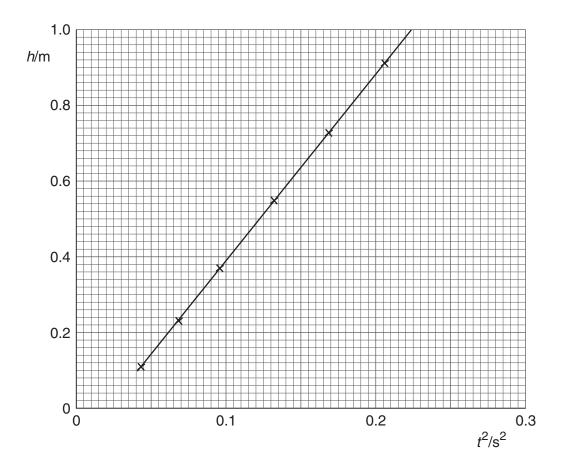


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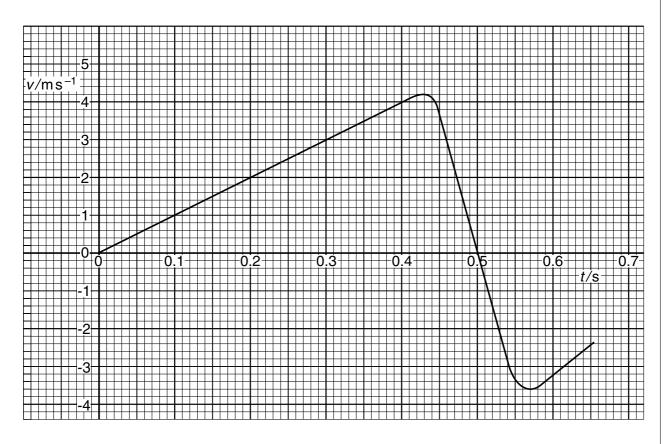


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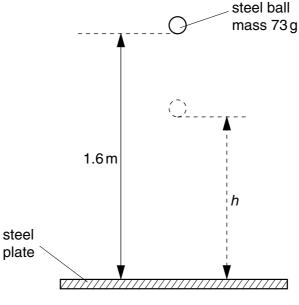


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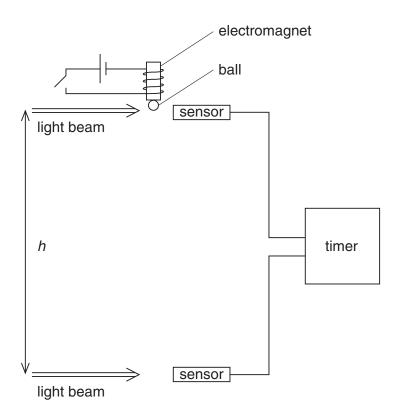


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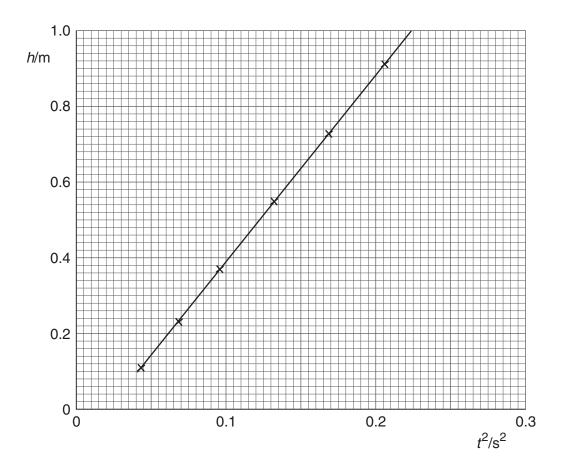


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