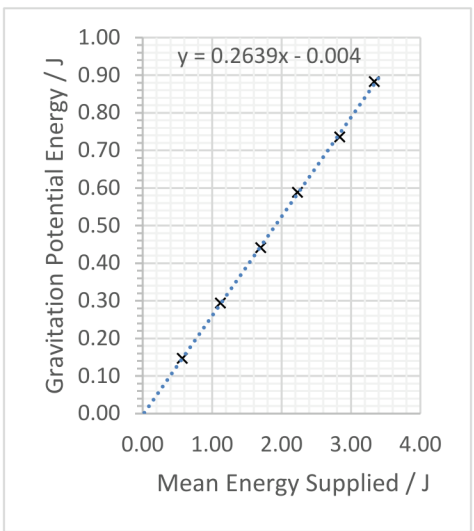
Question Number	Answer	Mark
4(a)	Max 2 from • Mass is not measured to the nearest gram **Or** mass is not measured (in kg) to 3 d.p. (1) • Inconsistent/incorrect number of significant figures for GPE (1) • Mean energy supplied values should be 3 s.f. (to match measured values) (Accept 2 d.p.) (1)	**2**
4(b)	• Use of $E_g = mgh$ (1) • Change in gravitational potential energy = 0.88 (J) (1) • Mean energy supplied = 3.34 (J) (1) Examples of calculation $E_g = 0.12 \text{ kg} \times 0.75 \text{ m} \times 9.81 \text{N kg}^{-1} = 0.883 \text{ J}$ Mean = (3.32 J + 3.36 J + 3.33 J) ÷ 3 = 3.34 J	**3**
4(c)	• Labels axes with quantities and units (1) • Sensible scales (1) • Plotting (2) • Line of best fit (1)  | Change GPE / J	Mean E Supplied / J
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0.147	0.573
0.29	1.12
0.441	1.7
0.59	2.23
0.74	2.84
0.88	*3.34*		**5**
4(d)	• Calculates gradient using large triangle (1) • Efficiency = 0.25 to 0.27 (accept value converted to %) (1) Example of calculation Gradient = (0.79 J – 0.26 J) ÷ (3.00 J – 1.00 J) = 0.265	**2**
4(e)	• Continue increasing the mass and extend the graph (1) • Identify the mass/point at which the line starts to curve (1) • Take smaller increments in mass around this point (1) **OR** • Using larger masses, calculate the efficiency (using efficiency = mgh ÷ mean energy supplied) **and** plot a graph of efficiency against mass (1) • Identify the mass/point where the graph peaks **Or** identify the mass where efficiency starts to decrease (1) • Take smaller increments in mass around this point (1)	**3**
	Total for question 4	**15**