1 A student times the fall of a small metal ball. Data for the time t taken for a ball of mass m to fall a vertical distance h from rest are given in the table below.

h	588 ± 1 cm
m	10 ± 1 g
t	1.1 ± 0.1 s

(a) Use the data to determine a value of the acceleration of free fall, g.

g = …… m s $^{-2}$ [2]

(b) The student collects 5 more sets of data at different heights.

Explain how the student can use the data to get a more accurate value of g.

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…… [2]

(c) Use your answer in **(a)** to determine the loss in gravitational potential energy *U* for the ball.

loss in gravitational potential energy = …… J [1]

(d) Hence, express U to an appropriate number of significant figures with its uncertainty.

U = ... ± ..... J [3]

[Total: 8]