Question number	Answer	Notes	Marks
10 a	a moon orbits a <u>planet</u>; a planet orbits a star (/the Sun) ;	Ignore • comments about eccentricity, oval, plane of orbit, time of orbit etc	1 1
b	Substitution; Evaluation; Unit (to **match** the value of v); e.g. $V = \frac{(2 \times \pi \times 385000)}{27} = \frac{2\ 417\ 800}{27}$ 90 000 km/day	Note value of π used may vary time values and corresponding approximate speeds are 27 days…….. 89 600 km/days 648 hours…….. 3 731 km/ hours 38 880 mins……. 62 km/min 2 332 800 s…… 1.04 km/s allow answers which round to 89 600 Accept suitable **matching** units	1 1 1
c i	E=1/2 mv^2;	Accept • rearranged equation • equation in words	
ii	substitution ; Mass converted to kg ; 47.(33…..) seen;	allow sub of mass as 50 g 1.496 or 1.5 seen gets 2 marks	3
d i	44(J) ;		1
ii	GPE = mgh;	Accept • rearranged equation • equation using (all the) words Allow for 'g' • gravitational field strength but NOT gravity	1

iii	Substitution and rearrangement; Calculation ; $\frac{12}{0.05 \times 1.6}$ 150 (m)	POT error loses 1 mark e.g. 0.15 (m) gets 1 mark	2
e	any Two from: • Value of g lower(on the Moon)/RA; • lack of air resistance (on the Moon)/RA; • Time of flight greater;	ignore • 'no gravity' allow • less gravity • drag for air resistance	2

(Total for Question 10 = 15 marks)