

Gravitational potential energy (GPE) and Kinetic energy (KE) combined questions.

[Total = 9 marks]

- 1.) An archer fires a bow and arrow vertically. The arrow has a mass of 70g and an initial vertical velocity of 30m/s. Calculate how high the arrow travel before it starts to fall back to the ground. [3]
- 2.) The Kingda Ka is the highest rollercoaster in the world with a drop height of 127m. A rollercoaster carriage on this ride has a mass of 5,000kg. If it falls the entire drop height down a slope what speed will it be travelling at when it gets to the bottom? [3]
- 3.) A group of professional high divers based in Acapulco, Mexico, perform a daily show for the public which involves them diving from a 35m high cliff into the sea. At what speed will they hit the water? [3]

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