ENERGY TRANSFORMATION

(Use g = 9.8 m/s 2 )

1. Find the Ek gain of a 10 kg object falling through 8 metres.

2 . A stone is dropped down a vertical shaft and has 200 J of energy just before impact at the bottom. If the mass of the stone is 0.5 kg find the depth of the shaft.

1. What is the maximum height that a 0.5 kg ball will reach when thrown vertically upwards with a Ek of 200 J.
2. A space capsule strikes the sea with a velocity of 20 m/s If it has a mass of 1 500 kg what is its Ek on impact with the sea?

5 . An arrow which is fired vertically upwards leaves the bow with a velocity of 20 m/s If the arrow weighs 0.25 kg how much P.E. has it gained at the point when it just begins to fall.

 A stone is dropped from a 20 cliff and just before impact has 400 J of energy. What is the mass of the stone?

 The Ep of a hill trolley is raised to 10 000 J. Through what distance would it be raised if its mass was 15 kg.

8 . How much kinetic energy must be supplied to a 7 kg rock projected vertically upwards if it is just to reach a maximum height of 15 metres?

 When an athlete does a high jump her centre of gravity increases from 1 m to 2 m. If the athlete's mass is 60 kg find:

1. her increase in potential energy and
2. her initial vertical velocity.

10 A 9 kg object is dropped 7 m from rest. Find :

its gain in kinetic energy

1. its loss in potential energy and
2. its velocity at this point.

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| ANSWERS  1.  2.  3.  4.  5. | 784 J  40.8  40.8 m  300 000  50 J | . | 6. 2 kg  7. 68 m  8. 1029 J  9. (a) 588 J  (b) 4.4 m/s  10. (a) 617 J  (b) 617 J  ( c) 11.7 m /s |