NAME_____

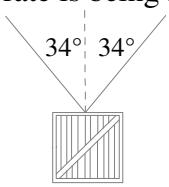
Year 11 Physics Assignment

Work, Energy and Momentum 1

1. Calculate the kinetic energy of Jehu's chariot if its total mass (including Jehu) is 125 kg and it is moving at a speed of 11.9 ms^{-1}. /2

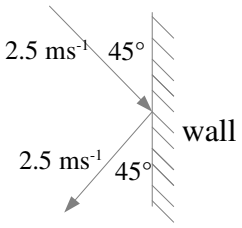
2. A 0.20 kg set of lab weights is lifted to a height of 1.0 m.
   a) Calculate the work done on the weights. /2
   b) State the gravitational potential energy of the lifted weights, and state a reason why. /2
   c) Draw a diagram of the lab weights falling. At the beginning, middle and end of its fall, write labels stating the potential and kinetic energy of the weights /3

3. A crate is being lifted directly upwards a height of 5 m by two cables as shown below:



   Given that the tension in each cable is 345 N, calculate the work done by each cable and therefore the total work done on the crate. /3

4. A ball of mass 2.1 kg bounces off a wall without a change in speed, as shown below.



   a) Calculate the ball's change in velocity /3
   b) Hence calculate the ball's change in momentum /2
   c) Hence calculate the force the wall exerts on the ball, if the collision lasts 0.10 seconds /3
   d) State the force the ball exerts on the wall /1

5. If a 8.2×10^3 kg train moving at 2.2 ms^{-1} reverses into and connects to a stationary 3.0×10^3 kg rail car. Calculate the final speed of the train. /3

TOTAL /24