A bullet of mass 10g moving with a velocity of 500 m/s ,strikes a tree and goes out from the other side with a velocity of 400 m/s .calculate the work done by the bullet in passing through the tree. Please show your work.

Work done by the bullet in passing through the tree is equal to change of kinetic energy of the bullet

$$A = \Delta W = \frac{Mv_2^2}{2} - \frac{Mv_1^2}{2} = \frac{M}{2}(v_2^2 - v_1^2)$$

where M – mass of bullet, v_2, v_1 – its velocity after and before collision

$$A = 0.5 * 0.01kg((500m/s)^2 - (400m/s)^2) = 450J$$

Answer: $A = 450J$