#1 Energy: Work, Mechanical Energy, and Power

Equations: $W = Fd$ $P = W/\Delta t$ $KE = 1/2mv^2$ $PE = mgh$

1) What work was done on an object if it was moved with a force of 25.0N for 15.0m?

2) A 75.0kg fireman climbs a 8.0m ladder to rescue a child from a burning house. How much work did the fireman do to get to the top?

3) If it takes 4.2J of work to move an object 0.6m, then how much force was applied?

4) What is the power output of a motor that can do 4500J or work every 10.0s?

5) What power was needed to raise a 14.2kg object 26.1m in 5.0s? What would it be if it was done in 2.5s?

6) What is the change in PE when a 52kg object was lifted 18.0m? How much work is that?

7) How much energy does a 5.33kg object have if it is moving at 8.3m/s?

8) If 6500J of energy is put into a 4.3kg object at rest, then what will its final velocity be?

9) If 530J of energy is used to raise a 130g object, then how high will it reach?

10) How long would it take a 3000W machine to raise a 45kg object 5.5m?

Answers

1) 375J
2) 6000J
3) 7N
4) 450W
5) 741W, 1482W
6) 9360J, 9360J
7) 184J
8) 55m/s
9) 408m
10) 0.825s