Answer on Question#39462 - Physics, Mechanics | Kinematics | Dynamics

Show that 480 W of power is expended by a weightlifter when lifting a 60-kg barbell a vertical distance of 1.2 m in a time interval of 1.5 s.

Solution:

Power is the rate at which work is done. It is the work/time ratio. Mathematically, it is computed using the following equation:

$$P = \frac{E}{t} = \frac{F \cdot d}{t} = \frac{mg \cdot d}{t} = \frac{60\text{kg} \cdot 10\frac{\text{N}}{\text{kg}} \cdot 1.2\text{m}}{1.5\text{s}} = 480\text{W}$$