

Answer on Question #72259-Physics-Other

A man of mass 50 kg ascends a flight of stairs 5 m high in 5 seconds. If acceleration due to gravity is 10ms^{-2} , the power expended is?

Solution

The weight of a man is

$$F = mg.$$

The work is

$$W = Fh = mgh$$

The power expended is

$$P = \frac{W}{t} = \frac{mgh}{t}$$

$$P = \frac{(50)(10)(5)}{5} = 500 \text{ W}.$$

Answer: 500 W.

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