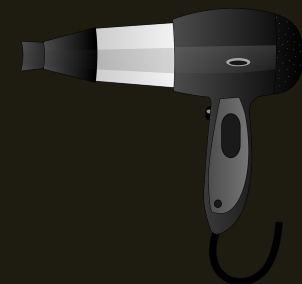


Power

- What Power Is
- Watts
- Electricity Generation
- Vehicle Power
- Horsepower



Preview File

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- Some slides appear blank because they have been removed
- Student versions have portions of the text removed which is given in the teacher version and appear as _____ which the students are to fill in
- Other slides may have on them, this represents writing that has been removed on this sample

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Power

- _____
- It is a scalar quantity
- The unit for energy is the joule
- Since we are discussing a rate, it must be over a time period (seconds)
- _____
- $1 \text{ J/s} = 1 \text{ watt (W)}$

$$P = \frac{\Delta E}{\Delta t}$$

$$\text{since } \Delta E = W_{\text{net}}$$

$$P = \frac{W_{\text{net}}}{\Delta t}$$

Watts

- Watts (W) and kilowatts (kW) are commonly used to indicate the power of electrical appliances

- _____

- _____

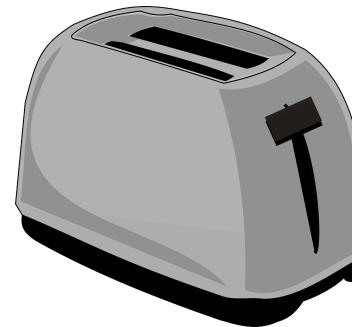
- _____

- _____

- _____

- _____

- _____



Watts

- Megawatts and Gigawatts are often used to rate the power of electric generating stations.

— _____

- Example: The coal-fired Ratcliffe Power Station in the UK has a rated capacity of 2 gigawatts (2000 Megawatts).



Most wind turbines have an output of ~2 MW

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Check Your Understanding

An 85 kg man climbs from a height of 2900 m to 3640 m in 60.0 minutes. What is the man's average power?

Check Your Understanding

The power rating of the world's largest wind generator is 3.0 MW. How long would it take such a generator to produce 1.0×10^{12} J, the amount of energy needed to launch a rocket, in days?

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Check Your Understanding

The Lamborghini Murcielago LP670-4 SuperVeloce has a weight of 3,450 lbs and can go from 0.0 – 60.0-mph in 2.8 seconds. What is the average power output of the car's engine in kW?

Check Your Understanding

The Tesla 3 Performance has a weight of 1800 kg and can go from 0.0 – 60.0-mph in 3.2 seconds. What is



Horsepower

- _____
- $1 \text{ W} = 0.00134 \text{ horsepower}$
- $1 \text{ kW} = 1.34 \text{ horsepower}$
- Looking at the previous question, what is the car's horsepower?
- Power = ?
- _____

