

CONCEPT The unit of power is joule per second, also known as the watt.



BACKGROUND

The Watt is named in honor of James Watt, the developer of the steam engine. During his work with the steam engine, Watt developed the concept of horsepower as a unit of power output. Since his engines replaced animals as a source of power, Watt described the power of the engines in terms of how many horses would have been required to generate it. Watt established one unit of horsepower to be equivalent to 33,000 pounds lifted one foot per minute.

APPLICATION

You should think of electric current as the flow of water through a hosepipe. The more water flowing through the hosepipe, the stronger the current is.

In keeping with the earlier example, you could think of volts as the water pressure in the hosepipe, which makes the water flow.

In terms of the hosepipe example, this would refer to the amount of water being released.



Make sure it measures up

FORMULAS

Power is the rate at which work is done.

Watt is the unit for power.

Power = Work / Time = (Force X Displacement) / Time

One kilowatt-hour is the amount of energy delivered by the flow of 1 kilowatt of electricity for one hour.

Amps measure the flow of electricity as an electric current.

Volts are the measurement used to determine how much force is needed to cause the electric current to flow.

Amps multiplied by Volts equals Watts, which is the measurement used to determine the amount of energy. The higher the wattage is, the more power and output from the appliance.

Amps x Volts = Watts

REAL WORLD CONNECTIONS

Different devices need different rates of energy to run, which is why a coffee maker might use 900W, but a ceiling fan would use 65W. You can think of watts as the electrical equivalent of horsepower.



EXAMPLES

Energy is the ability to do work.

A joule is a unit of energy.

A kilowatt-hour is a unit of energy.

Power is how fast energy is used or produced. Power is the amount of work done divided by the time interval.

A watt (W) is a joule (J) of energy used or produced per second.

A horsepower is a unit of power.

1 horsepower (hp) is 745.7 watts.



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