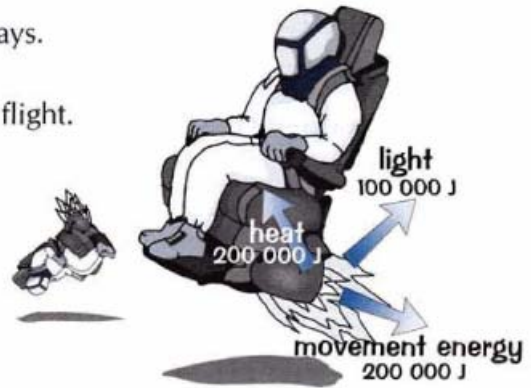


Q1

A rocket chair is made, which produces energy in 3 ways.

- The diagram shows all the energy output during a test flight. What must the energy input have been?
- How much energy is wasted by the chair?
- What is the chair's efficiency? (to nearest 1%)



Q2

To show 5 minutes of Pets Win Pies, a TV must give out 100 500 J as light from the screen, and 52 500 J as sound from the speaker. Some energy is wasted as heat.

- The TV is rated at 600 W. Calculate the energy it uses during 5 minutes.
- What's the efficiency of the TV?
- How much energy would it waste if you watched 10 minutes of Who Wants To Be A Millionaire?

Q3

A machine has an electric pump and a piston. It applies a pressure of 15 N/m² to the piston.

- The pump operates at 150 W while it makes the piston move 0.1 m. It takes 6 seconds. How much energy is used?
- The machine is 25% efficient when it moves the piston in this way. How much work is done?
- What is the area of the piston?
- To move the piston 0.2 m, the machine uses 2000 J of electrical energy. How efficient is it now?