

Video worksheet – efficiency in combustion reactions.

1. A Bunsen burner is used to heat 50.0 grams of water at 23.0 °C to a temperature of 38.0 °C, using the setup shown on the right. A mass of 0.160 grams of methane gas flowed through the Bunsen burner. Calculate the efficiency of this apparatus in converting chemical energy into heat energy for the heating of water.



2. A kettle running on propane gas is 80.0 % efficient in converting chemical energy into heat energy to heat a given volume of water. What amount, in grams, of fuel is needed to raise the temperature of 400.0 grams of water by 30.0 °C?

3. A diesel generator operates at 30.0% efficiency in converting chemical energy into electrical energy. What amount, in kg, of diesel fuel is needed in order to produce 40.00 kilowatt hours(kWh) of energy. (1 kilowatt hour = 3600 kJ)



4. An electric car is driven a distance of 6.80×10^2 km. Its motor uses a hydrogen fuel cell to produce electrical energy to power a vehicle. If the vehicle uses 30 kWh to travel 160 km what amount, in grams, of hydrogen gas is needed if the fuel cell is 80.0 % efficient in converting chemical energy into electrical energy? (1 kilowatt hour = 3600 kJ)

