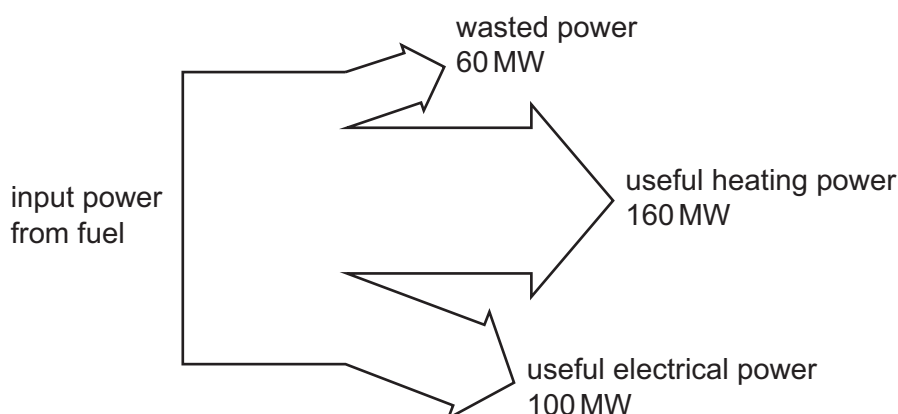


- 16 A combined heat and power (CHP) station generates electrical power and useful heat. The diagram shows the input and output for a CHP station.



What is the efficiency of the CHP station for producing useful power?

- A** 31%                      **B** 38%                      **C** 50%                      **D** 81%
- 17 In 'normal driving conditions', an electric car has a range of 150 km. This uses all of the 200 MJ energy stored in its batteries.

With the batteries initially fully charged, the car is driven 100 km in 'normal driving conditions'. The batteries are then recharged from a household electrical supply delivering a constant current of 13.0 A at a potential difference (p.d.) of 230 V.

What is the minimum time required to recharge the batteries?

- A** 0.95 hours  
**B** 12.4 hours  
**C** 18.6 hours  
**D** 27.9 hours
- 18 A fixed amount of gas is reduced in volume at a constant temperature.

What is the reason for the increase in pressure of the gas?

- A** The average distance travelled between collisions by the gas molecules is increased.  
**B** The average intermolecular attractive force between the gas molecules is decreased.  
**C** The average speed of the gas molecules is increased.  
**D** The frequency of the collisions of the gas molecules with the walls of the container is increased.