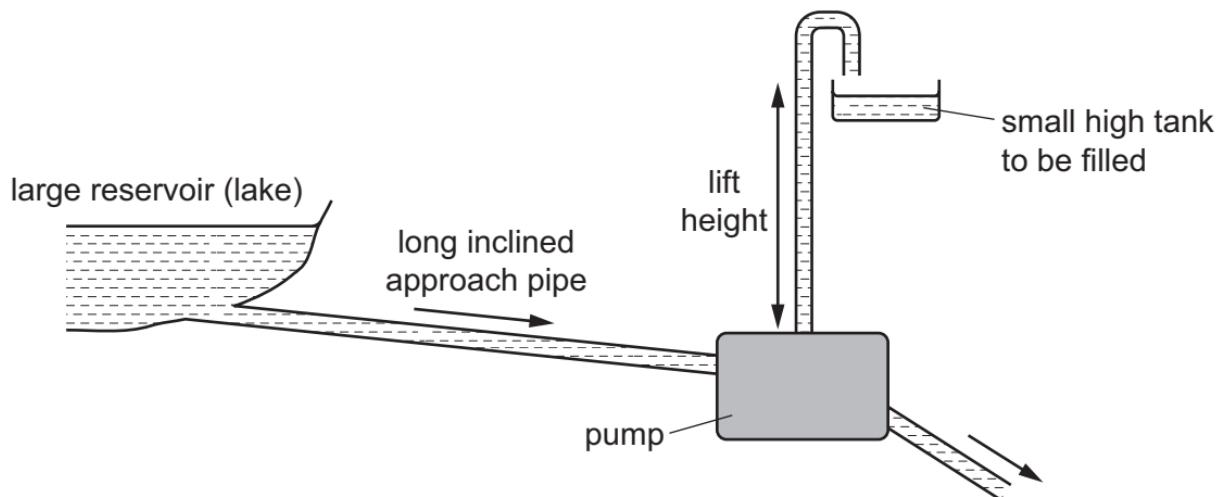


18 The diagram shows a pump called a hydraulic ram.



In one such pump the long approach pipe holds 500 kg of water. A valve shuts when the speed of this water reaches  $2.0 \text{ ms}^{-1}$  and the kinetic energy of this water is used to lift a small quantity of water by a height of 15 m.

The efficiency of the pump is 10%.

Which mass of water could be lifted 15 m?

- A** 0.15 kg
- B** 0.68 kg
- C** 1.5 kg
- D** 6.8 kg

19 A conveyor belt is driven at velocity  $v$  by a motor. Sand drops vertically on to the belt at a rate of