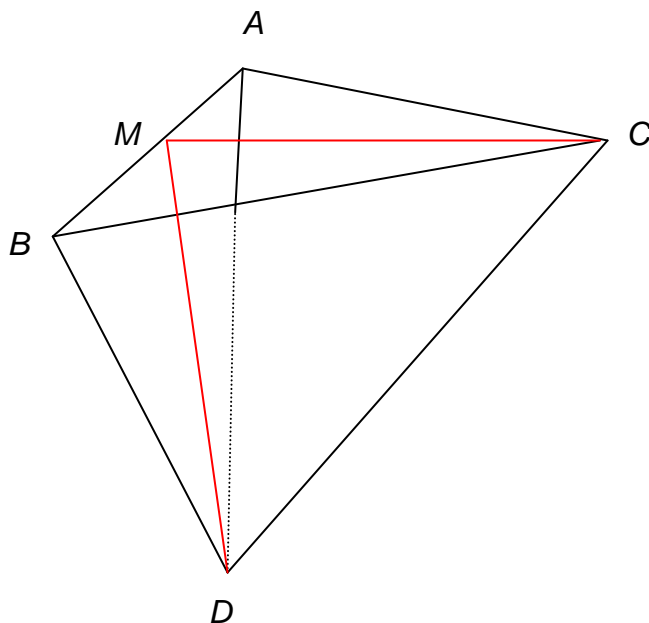


A tank is in the shape of a pyramid as depicted in the following picture. Take into consideration the following qualities that this pyramid possesses: $\overline{CM} \perp \overline{DM}$, $\overline{CM} \perp \overline{AB}$, $\overline{DM} \perp \overline{AB}$, $\overline{AD} \cong \overline{BD}$, and $\overline{AC} \cong \overline{BC} \cong \overline{AB}$. Also note that $DM = 30$ m, $CM = 40$ m, and the triangle $\triangle ABC$ is parallel to the horizontal.



- i) If this tank is full of water, then how much work is required to pump the water to the top, which is open, so that the water flows out?
- ii) What if the top is closed and there is a spout at the top out from the water flows and the spout is 5 m tall? Assume that the tank is not full, but filled with water whose level is half the height of this tank.