18 An electric railway locomotive has a maximum mechanical output power of 4.0 MW. Electrical power is delivered at 25 kV from overhead wires. The overall efficiency of the locomotive in converting electrical power to mechanical power is 80 %.

What is the current from the overhead wires when the locomotive is operating at its maximum power?
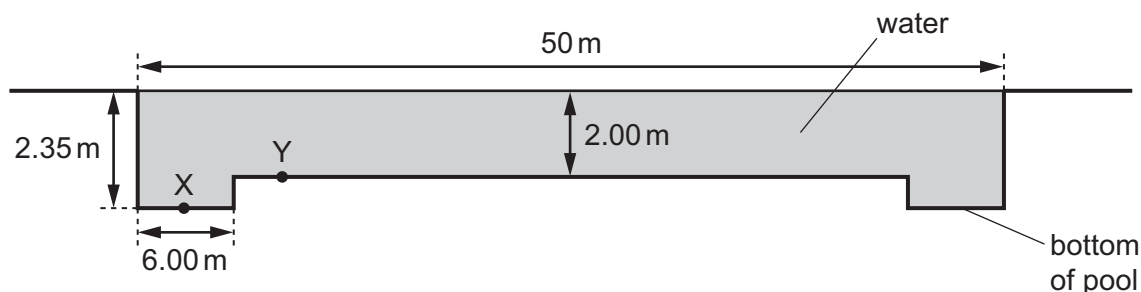
A 130 A   **B** 160 A   **C** 200 A   **D** 250 A

19 The table summarises some descriptions of evaporation.

Which row of the table is correct?

	involves a change in state from liquid to vapour	occurs at a fixed temperature	involves a reduction in the average kinetic energy of the remaining atoms
A	true	true	true
B	true	false	true
C	true	false	false
D	false	true	false

20 The diagram shows the cross-section of an Olympic-size swimming pool filled with water. It is not drawn to scale. The density of the water is 1000 kg m^{-3}.

What is the difference in pressure between X and Y?

A 0.35 kPa   **B** 3.4 kPa   **C** 21.3 kPa   **D** 58.9 kPa

21 A force acts on a wire to produce extension e. The same force then acts on a second wire of the same material, but of half the diameter and three times the length of the first wire. Both wires obey Hooke's law.

What is the extension of the second wire?

A $3e$ **B** $4e$ **C** $6e$ **D** $12e$