**15** In a large container in an oil refinery, three oils of different densities are mixed. No chemical activity occurs.

The mixture consists of:

1200 kg of oil of density 1100 kg m$^{-3}$

1500 kg of oil of density 860 kg m$^{-3}$

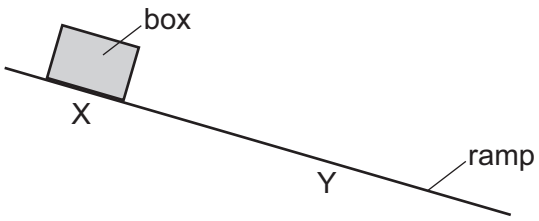
4000 kg of oil of density 910 kg m$^{-3}$.

What is the density of the mixture?

**A** 927 kg m$^{-3}$ **B** 933 kg m$^{-3}$ **C** 957 kg m$^{-3}$ **D** 1045 kg m$^{-3}$

**16** A box slides down a rough ramp.

The change in the gravitational potential energy of the box is 16 J as it moves between positions X and Y. The box has 24 J of kinetic energy at X and 35 J of kinetic energy at Y.




How much work is done against the frictional force?

**A** 5 J **B** 19 J **C** 27 J **D** 43 J

**17** The total energy supplied to an electric motor is $E$. Energy $Q$ is wasted and the remaining energy does useful work.

What is the efficiency of the motor?

**A** $\frac{Q}{E}$ **B** $\left(\frac{Q}{E}\right) - 1$ **C** $1 - \left(\frac{Q}{E}\right)$ **D** $\frac{(1-Q)}{E}$