2. A local sports centre has showers with two temperature settings, warm and hot.

On the warm setting, the water temperature may be modelled by a Normal distribution with mean 30 °C and standard deviation 2 °C

(a) Using the model, find the probability that the next time the shower is used on the warm setting, the water temperature is

   (i)   exactly 31°C

   (ii) more than 31°C

(2)

The sports centre manager thinks that a water temperature of more than 33 °C is too high for the warm setting.
She tests the water temperature on the warm setting on 5 randomly selected days.

Given that the probability of the water temperature being more than 33 °C is 0.0668

(b) find the probability of the water temperature being more than 33 °C

   (i)   on only the first of these 5 days,

(2)

   (ii) on more than 1 of these 5 days.

(3)

On the hot setting, the water temperature may be modelled by a Normal distribution with standard deviation 1.5 °C

The probability that the water temperature is more than 42 °C is 0.0005

(c) Find the mean water temperature on this setting, giving your answer to 1 decimal place.

(4)