

Monster Energy drink cans are advertised to contain 500ml. During the production, the volume X in ml in cans of the drink can be modelled by a normal distribution with mean 504 and variance 10.



- a) For a randomly selected can, work out $P(X > 500)$
- b) Cans are put in packs of 6. Find the probability that at least 5 cans are have a volume of at least 500ml.

a) $X \sim N(504, 10)$

Careful, the standard deviation $=\sqrt{10}$

$$P(X > 500) \approx \mathbf{0.897}$$

Lower=500

Upper = 9×10^{99}

$$\sigma = \sqrt{10}$$

$$\mu = 504$$

b) Let Y be the number of can with a volume greater than 500ml

The probability of selecting a can with at least 500ml, $p = 0.8970$

$$Y \sim B(6, 0.8970)$$

$$P(X \geq 5) \approx \mathbf{0.880}$$

Lower = 5

Upper = 6

Number of trials = 6

P = 0.8970