Normal Distribution Revision

Let $X \sim N(\overset{\mu}{24}, \overset{\sigma^2}{5^2})$

By calc

Find i) $P(X \geq 28)$ — 0.2119

ii) $P(X < 17)$ — 0.0808

iii) $P(17 \leq X \leq 28)$ — 0.7074

iv) Find value for which 60% of data exceed that value

$X = 22.7$

Standardization

trg 50

$$X \sim N(\mu, \sigma^2)$$

$$Z \sim N(0, 1^2)$$

$$Z = \frac{x - \mu}{\sigma}$$

Thus we can standardize any normal distribution with this formula

Typical Question

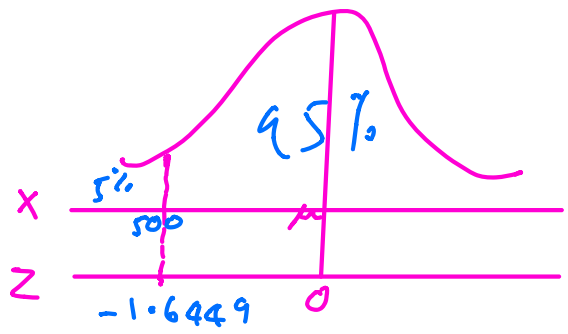
Cornflake machine delivers cornflakes with standard deviation 10g

If we need 95% of packets to contain at least 500g, what should the mean be set at

$$X \sim N(\mu, 10^2)$$

$sd_x = 10$

$sd_z = 1$



$$Z = \frac{x - \mu}{\sigma}$$

$$\sigma z = x - \mu$$

$$\mu = x - \sigma z$$

$$\mu = 500 - 10 \times -1.6449$$

$$\mu = 516.449\,g$$

$$\mu = 516\,g$$