Parameters of Normal Distributions
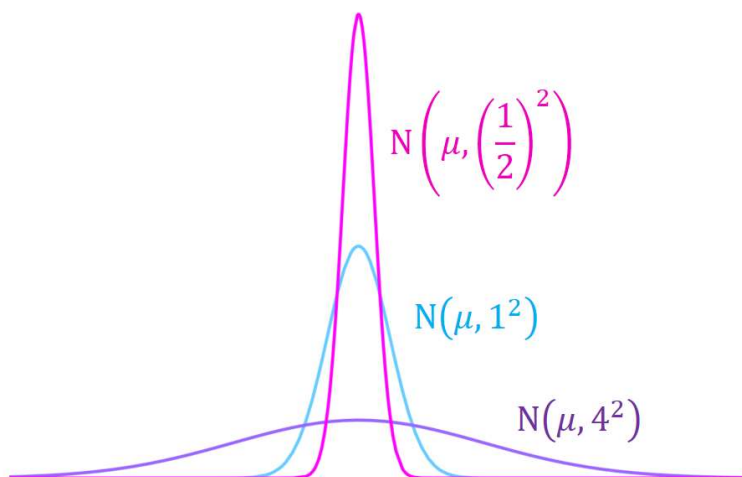
Effect of Variation of μ

Increasing the mean translates the distribution to the right.
Decreasing the mean translates the distribution to the left.

$$N(-5, \sigma^2) \qquad N(0, \sigma^2) \qquad N(5, \sigma^2)$$
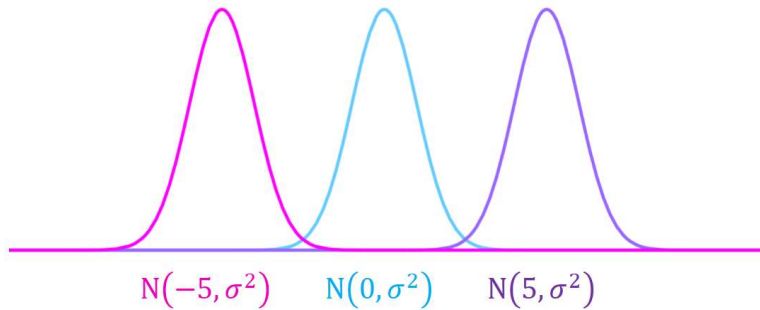
Effect of Variation of σ

Increasing the standard deviation dilates the distribution.

$$N\left(\mu, \left(\frac{1}{2}\right)^2\right)$$

$$N(\mu, 1^2)$$

$$N(\mu, 4^2)$$

Example VCAA 2000 Exam 1 Question 27

The diagram shows two normal distribution curves with means μ_1 and μ_2 and variances σ_1^2 and σ_1^2 respectively.

For these normal distribution curves $\mu_1 < \mu_2$ and $\sigma_1 < \sigma_2$.

$$X_1 \sim N(\mu_1, \sigma_1^2)$$

$$X_2 \sim N(\mu_2, \sigma_2^2)$$