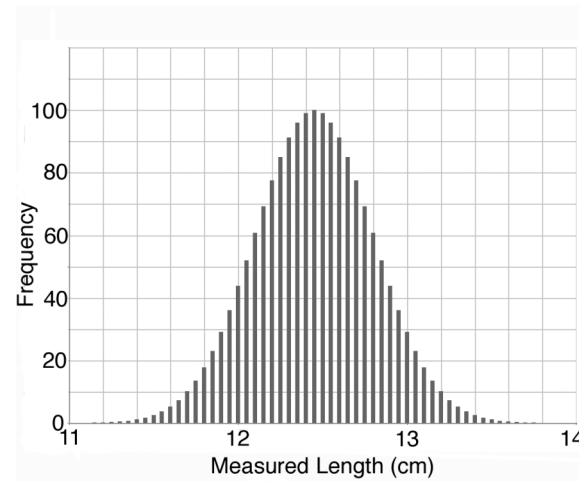
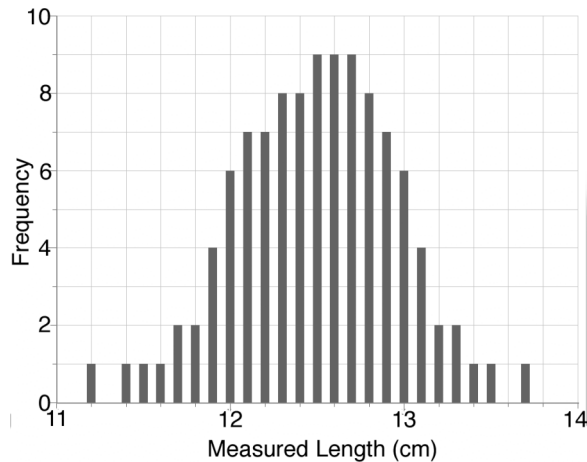


Unit 2.7

Our data should come out with a **bell-shaped** “curve”

- ⇒ Normal distribution
- ⇒ Gaussian distribution



If we were to find an equation that models our histogram, it would be:

$$f(t) = \frac{1}{\sigma_{sd} \sqrt{2\pi}} e^{-\frac{1}{2} \left(\frac{(t - \langle t \rangle)^2}{\sigma_{sd}^2} \right)}$$

Unit 2.8

True time for a ball to fall 2 m: $t = 0.639$ s

For the majority of you, your range of $\langle t \rangle \pm \sigma_{sd}$ does **not** include the theoretical value of 0.639 s.

⇒ Systematic error

Sources of the error: Ask yourself

- what quantities did I measure?
- how did I measure them?
- what did I “use” to measure them?

For the ball drop:

- **Distance**

- Meter stick: Check against a standard.
etc.

- Human technique: Check if you are using stick properly.
Placing the ball at the correct height.
etc.

- **Time**

- Stopwatch: Check if it is functioning properly.
etc.

- Human technique: Proper starting and stopping.
Giving the ball an initial speed.
etc.