



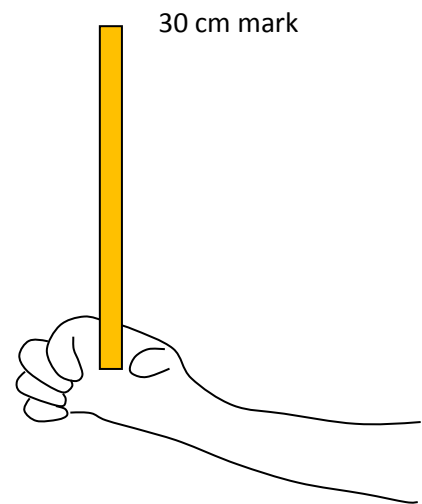
Bathurst Aero Club

Science Week – Reaction Time

Pilots need to maintain a good situational awareness of the environment around them and have a quick reaction time to unexpected events. Try the following experiment to see how quick your reaction time is.

Experiment – Measure Your Reaction Time

1. Person 1 holds a 30cm ruler vertically above the hand of Person 2
2. Person 2 places their thumb and index finger either side at the base of the ruler at the 0cm mark, but not touching the ruler. Be prepared to catch the ruler when it falls.
3. Person 1 lets the ruler go so that it drops without warning
4. Person 2 catches the ruler as quickly as they can taking note of the number on the ruler where they caught it
5. Calculate your reaction time:



This experiment tests how long it takes the brain to notice that the ruler is falling and then sends a message to your fingers to catch it. As gravity causes all objects to fall at the same rate the reaction time can be calculated with this formula.

$$t = \sqrt{\frac{d}{4.9}}$$

t is the reaction time in seconds and d is the distance the ruler falls in metres
If you catch the ruler at the 10cm mark the reaction time is

$$t = \sqrt{\frac{0.1}{4.9}} = 0.143 \text{ seconds} = 143 \text{ milliseconds}$$