

Practical Guide Biology Reaction Time

This document contains:

- Links to YouTube clips showing the practical procedure
- Information from examination boards AQA, OCR, Edexcel
- Potential examination questions and answers

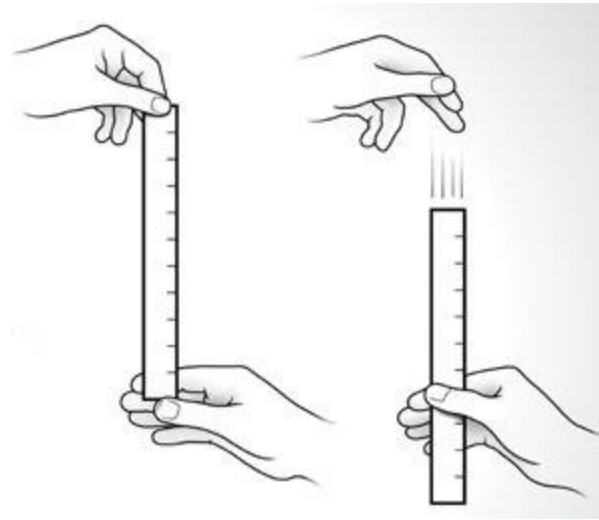
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- AQA

Required practical activity	Apparatus and techniques
Plan and carry out an investigation into the effect of a factor on human reaction time.	AT 1, AT 3, AT 4

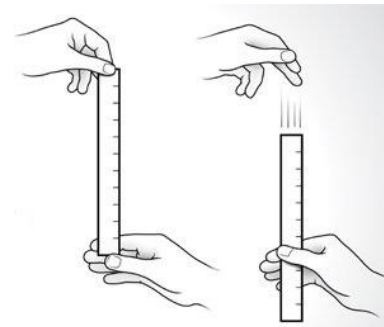


Video 1

Video 2

A student carried out an investigation into the reactions of a friend using the ruler drop experiment.

The mean distance the ruler was dropped was 113mm.



1. Use this equation to calculate the reaction time:

$$\text{reaction time (s)} = \sqrt{\frac{\text{mean drop distance (cm)}}{490}}$$

2. List 5 variables which would need to be kept constant in order to gain valid data.
3. The student wanted to see if caffeine had an impact on reaction time. Describe how she could carry out the experiment to test this.

1. Use this equation to calculate the reaction time:

$$\text{reaction time (s)} = \sqrt{\frac{\text{mean drop distance (cm)}}{490}}$$

ANS:

$$\sqrt{113/490} = 0.48\text{s}$$

2. List 5 variables which would need to be kept constant in order to gain valid data.

ANS:

- **Height ruler is dropped from**
- **Ruler/ weight of ruler**
- **Not using force when dropping it**
- **Distance thumb/ hand is from the ruler**
- **Laying arm on same surface**
- **Using same hand/ using dominant hand**

3. The student wanted to see if caffeine had an impact on reaction time. Describe how she could carry out the experiment to test this.

ANS:

- **Give specific amount of caffeine/ coffee each time**
- **Same time between drinking and experiment**
- **Valid experiment – see previous question**
- **Repeats**

Key questions:



- How could the validity of the experiment be improved?
- How have you ensured the results are valid?
- How would you calculate the reaction time from the distance?
- How many repeats would you do?
- Describe the potential impact of repeats on reaction time.
- What impact do you think a lack of sleep would have upon the results?
- Why do you think charities such as GEM motoring assist produce free cards for people to find out their reaction times?
(<https://www.motoringassist.com/the-gem-story/leaflets/>)

A summary document is also available on Huddle which contains all the relevant information about this practical from the different examination boards. This document includes practical methods and other potential examination questions