Required Practical Reaction Time

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Describe how to measure reaction time with a ruler. (4 marks)

Step 1 · Set up

Person A holds a 30 cm ruler vertically with 0 cm level with the top of person B's thumb and finger, which are held apart but not touching it.

Step 2 · Drop

Without warning, A drops the ruler; B catches it

Step 3 · Read

Record the distance at the top of B's thumb.

Step 4 · Repeat and convert

Repeat several times, calculate a mean distance, and convert to time using a table or $t = \sqrt{(2d \div g)}$.

Answer: Drop, catch, read distance, repeat, convert to time

Check: The catcher should rest their arm on a table edge so only the hand moves.

2. Now try one with the steps

Catch distances were 22, 18, 20, 19 and 16 cm. Calculate the mean distance. (1 mark)

Step 1 · Add

Step 2 · Divide by 5

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What is reaction time? [1]

2. In the ruler-drop test, what is the stimulus? [1]

3. Name the receptor and effector in the ruler-drop test. [2]

4. Give two control variables. [2]

5. Why is the ruler dropped without warning? [1]

6. Catch distances were 15, 14, 16, 13 and 12 cm. Calculate the mean in cm. [1]

7. Explain why a shorter catch distance means a faster reaction. [1]

8. Explain why this response is not a reflex. [2]

9. Suggest one independent variable that could be investigated. [1]

10. Use $t = \sqrt{(2d \div 9.8)}$ to convert 10 cm into a reaction time in seconds, to 3 significant figures. [2]

11. A mean distance decreased from 20 cm to 15 cm. Calculate the percentage decrease. [2]

12. Explain why the caffeine version of this practical raises ethical concerns in schools. [2]

13. Suggest why results from the same person are more repeatable than comparing different people. [2]

14. Evaluate the ruler-drop method way of measuring reaction time. [4]

4. Before you hand it in

"A bigger catch distance means a quicker reaction."
A SHORTER distance = SHORTER reaction time = faster response.

"Catching the ruler is a reflex."
Reflexes are automatic; this is a voluntary, conscious response.

Using one trial only
Repeat at least five times and calculate a mean; discard anomalies.