

**GCSE Biology A (Gateway)**

**J247/01 B1-B3 and B7 Foundation (Foundation Tier)**

**Question Set 13**

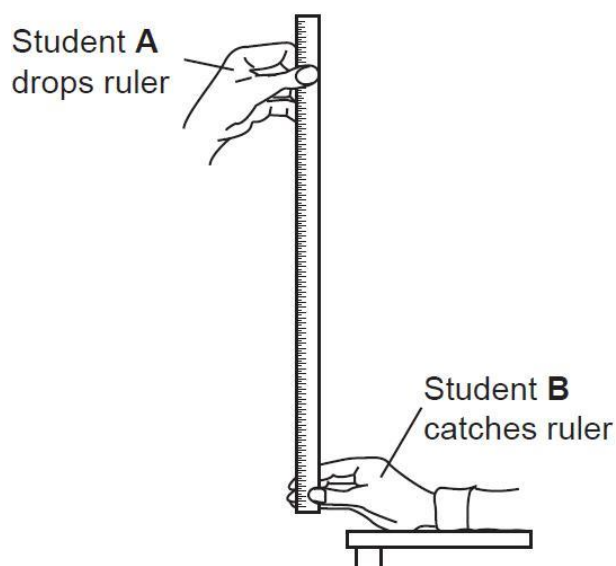
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A class of students investigate reaction time.

Student **A** drops a ruler while student **B** catches it.

They then measure the position of student **B**'s thumb on the ruler; this is the drop distance.

The diagram shows how the measurements were taken.



The drop distance is converted into a reaction time. The reaction time in seconds for each hand is recorded.

The table shows the results for ten **right-handed** students in the class.

Reaction time(s)	
Left non-dominant hand	Right dominant hand
0.22	0.28
0.23	0.25
0.27	0.23
0.24	0.24
0.25	0.24
0.25	0.25
0.25	0.26
0.25	0.26
0.25	0.26
0.27	0.23
Mean = 0.25	Mean = 0.25

- (a) (i) Calculate the **mode** for the right dominant hand.

Answer = .....0.26..... seconds [1]

- (ii) The mean and mode for the left non-dominant hand are identical.

What **other** conclusions can be made about reaction times in these ten students? [2]

Means are identical so no difference between reaction time in each hand.  
Mode shows that the non-dominant hand has most often the faster reaction time.

- (b) How could these students improve the recording of their results? [2]

Include the units and record results in rank order.

- (c) The students want to investigate reaction times to see if left-handed people are faster than right-handed people. [3]

How could they develop the experiment to test this?

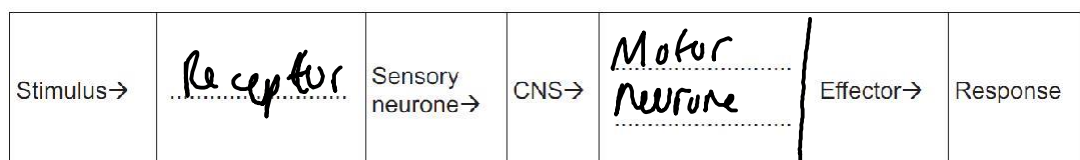
Use ten left dominant handed students and ten right dominant handed students and compare the mean reaction time for each group.

- (d) The reaction in the experiment involves a **stimulus**. [1]

What is the stimulus in the reaction involving catching the ruler?

Sight

- (e) Complete the sequence of a reflex arc. [2]



**Total Marks for Question Set 13: 11**

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