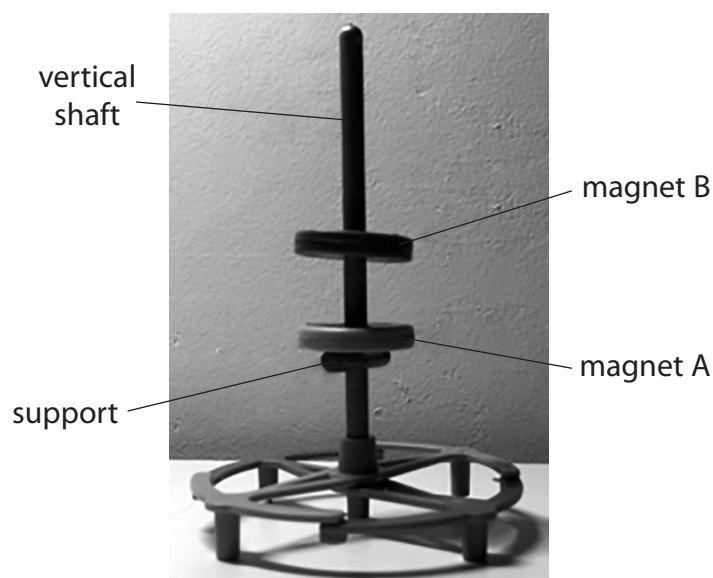


4 Photograph 1 shows a child's toy.

The toy has two magnets on a vertical shaft.



**Photograph 1**

Magnet A rests on a support near the bottom of the vertical shaft.

A student places magnet B at the top of the vertical shaft and releases it from rest.

Magnet B is repelled by magnet A causing it to come to rest again at the position shown.

- (c) The student adds a 10 g mass on top of magnet B when it is stationary above magnet A and observes that the distance between the magnets decreases.

He carries out an investigation to see how the distance changes as more masses are added.

Describe a method for the student's investigation.

In your answer, you should refer to

- the measuring equipment required
- the independent and dependent variables
- a way to check the reliability of the data

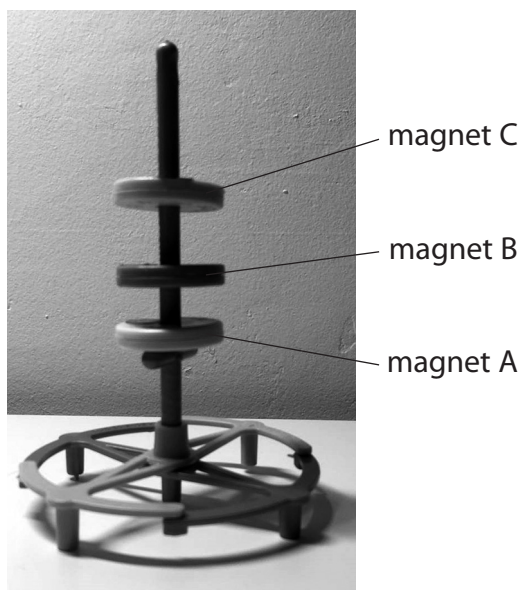
You may draw a diagram to help your answer.

(5)



(d) The student removes the masses from magnet B.

He then adds magnet C on to the vertical shaft.



**Photograph 2**

Photograph 2 shows that when magnet C is added, magnet B moves further down the shaft until it is at rest again.

Explain why the distance between magnet A and magnet B has decreased.

(3)

**(Total for Question 4 = 13 marks)**

