

A



**A-level**

**PHYSICS**

**Paper 3**

**Section A**

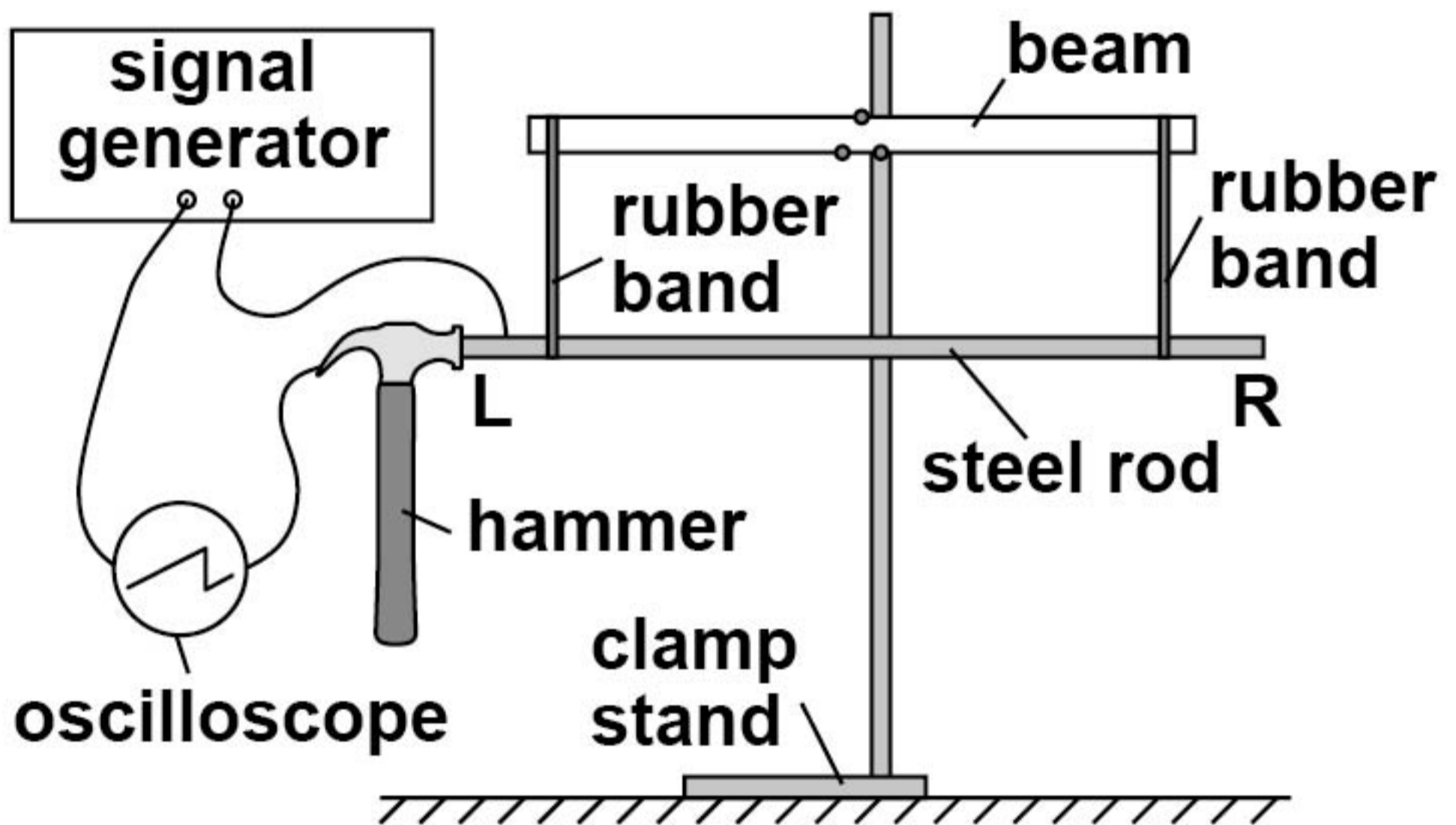
**7408/3A**

**Diagram Booklet**

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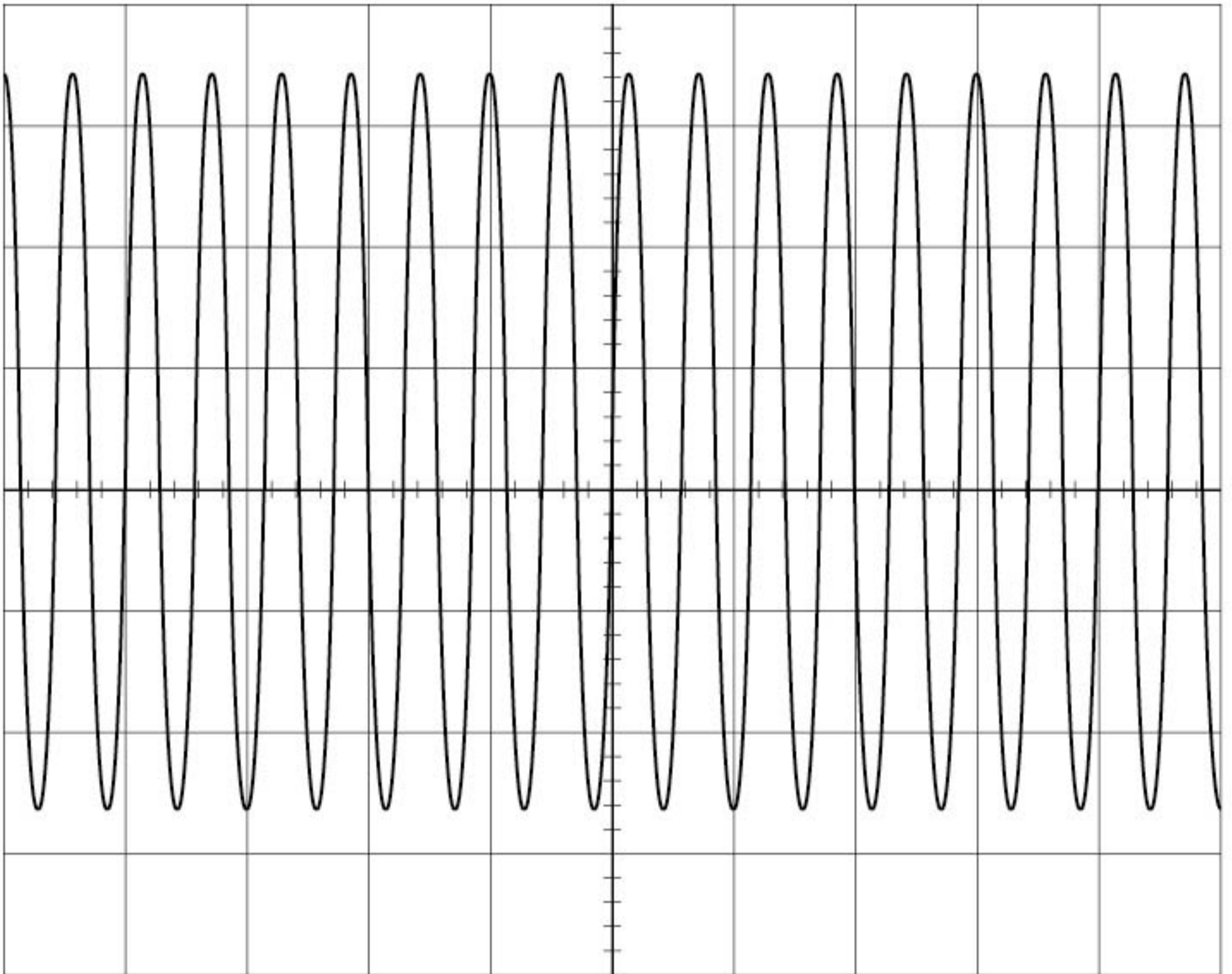
**FIGURE 1**

**FIGURE 1** shows apparatus used to measure the speed of sound in a steel rod.



**FIGURE 2**

**FIGURE 2 shows the waveform then displayed on the oscilloscope.**

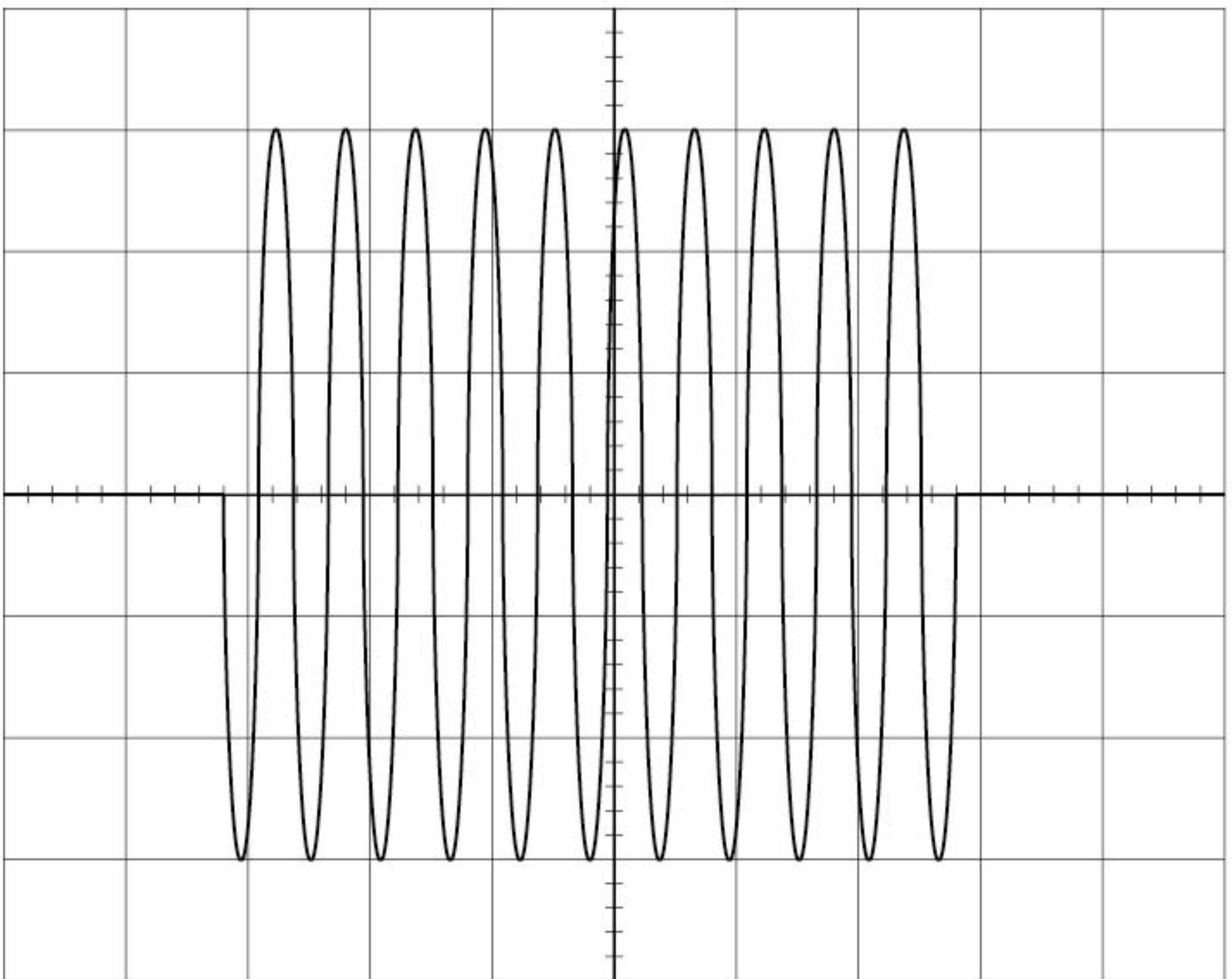


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**FIGURE 3**

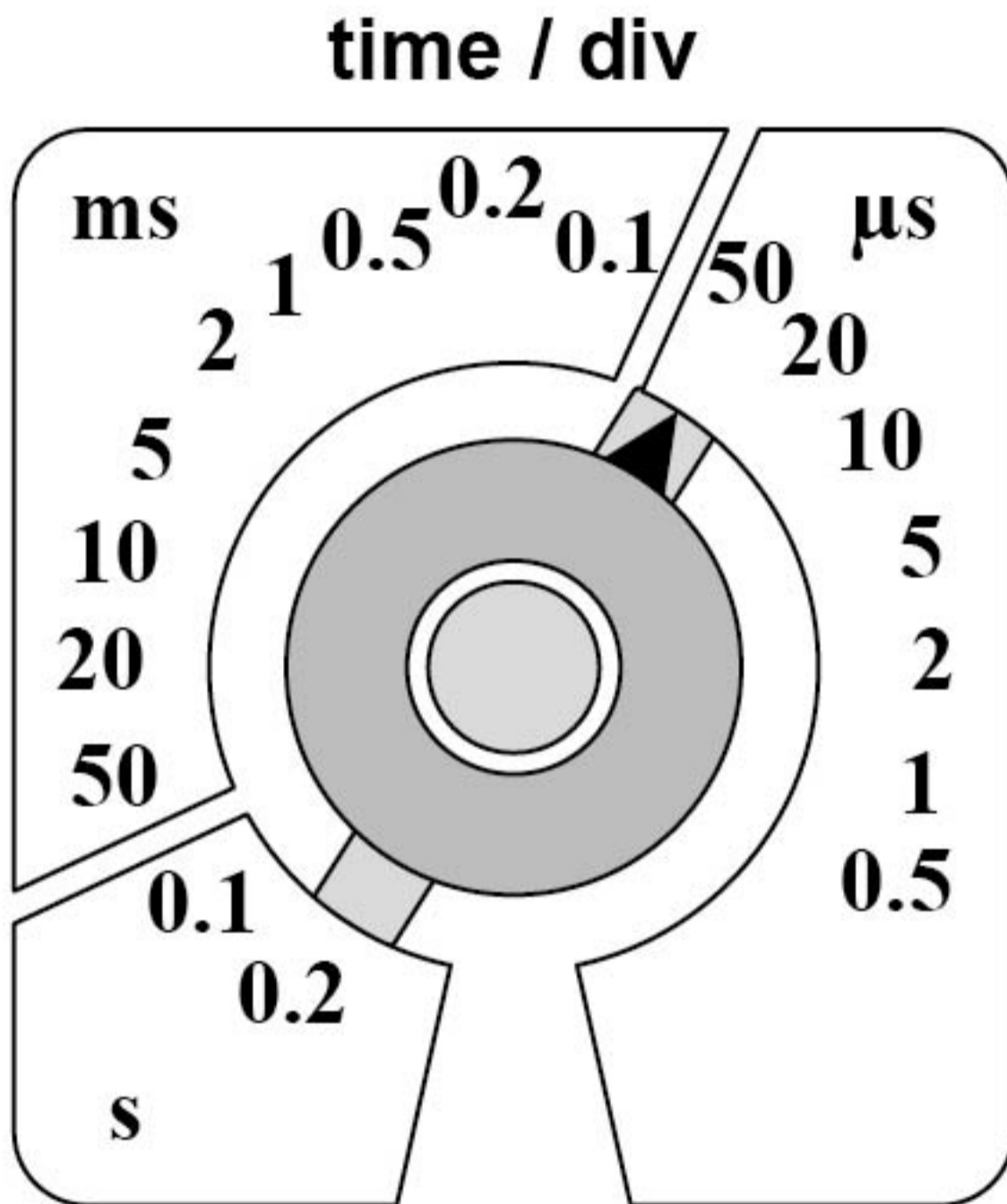
**FIGURE 3 shows the waveform produced by the brief contact between the hammer and L.**

**Note that the waveform has now been centred vertically.**



**FIGURE 4**

**FIGURE 4 shows the time-base setting of the oscilloscope.**

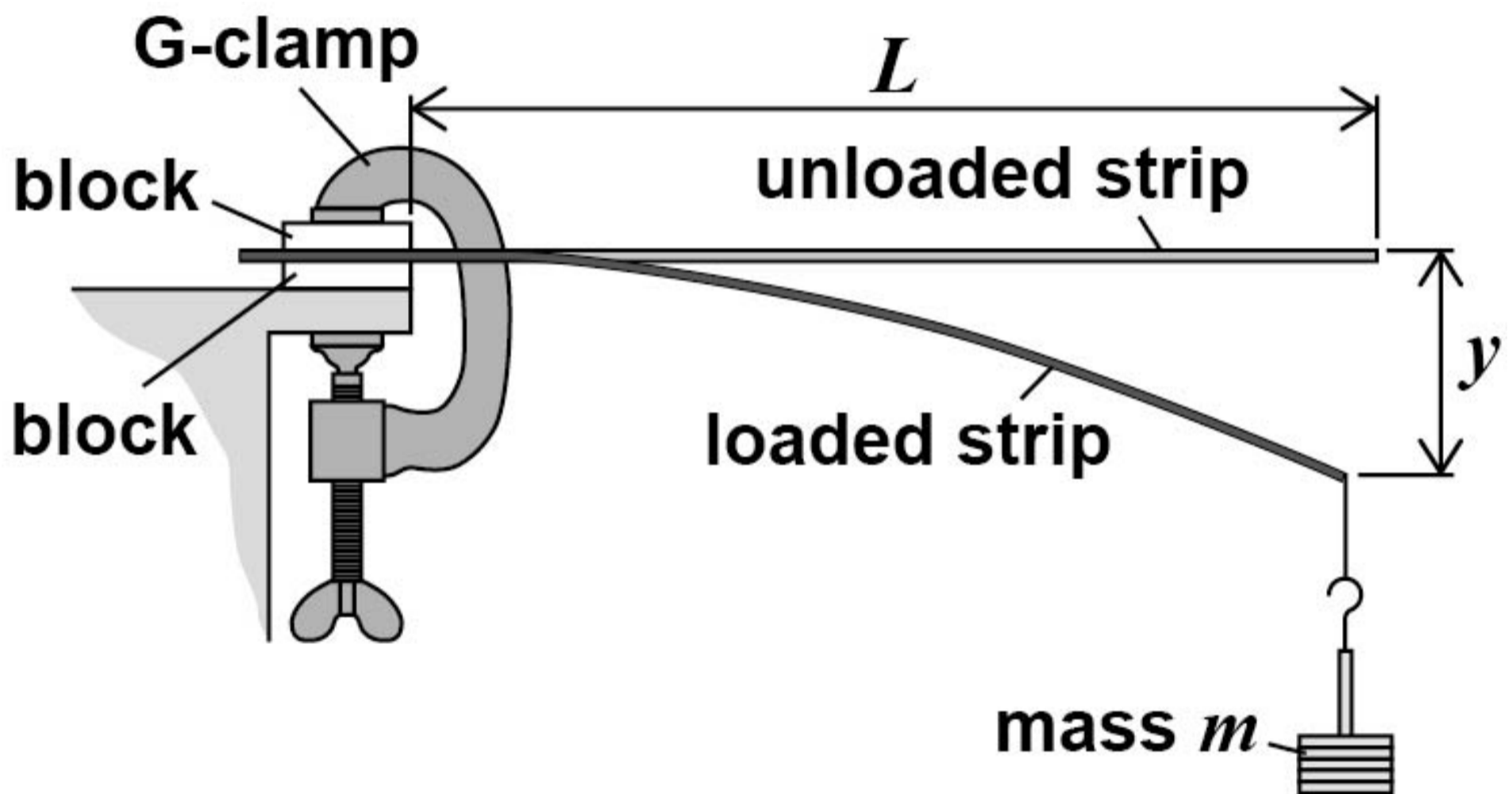


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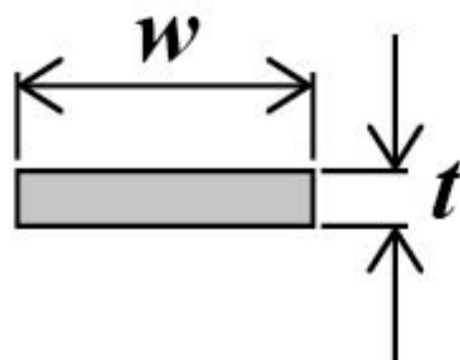
**FIGURE 5**

**FIGURE 5** shows a strip of steel of rectangular cross-section clamped at one end.

The strip extends horizontally over the edge of a bench.



**end view of unloaded steel strip**



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## **FIGURE 7**

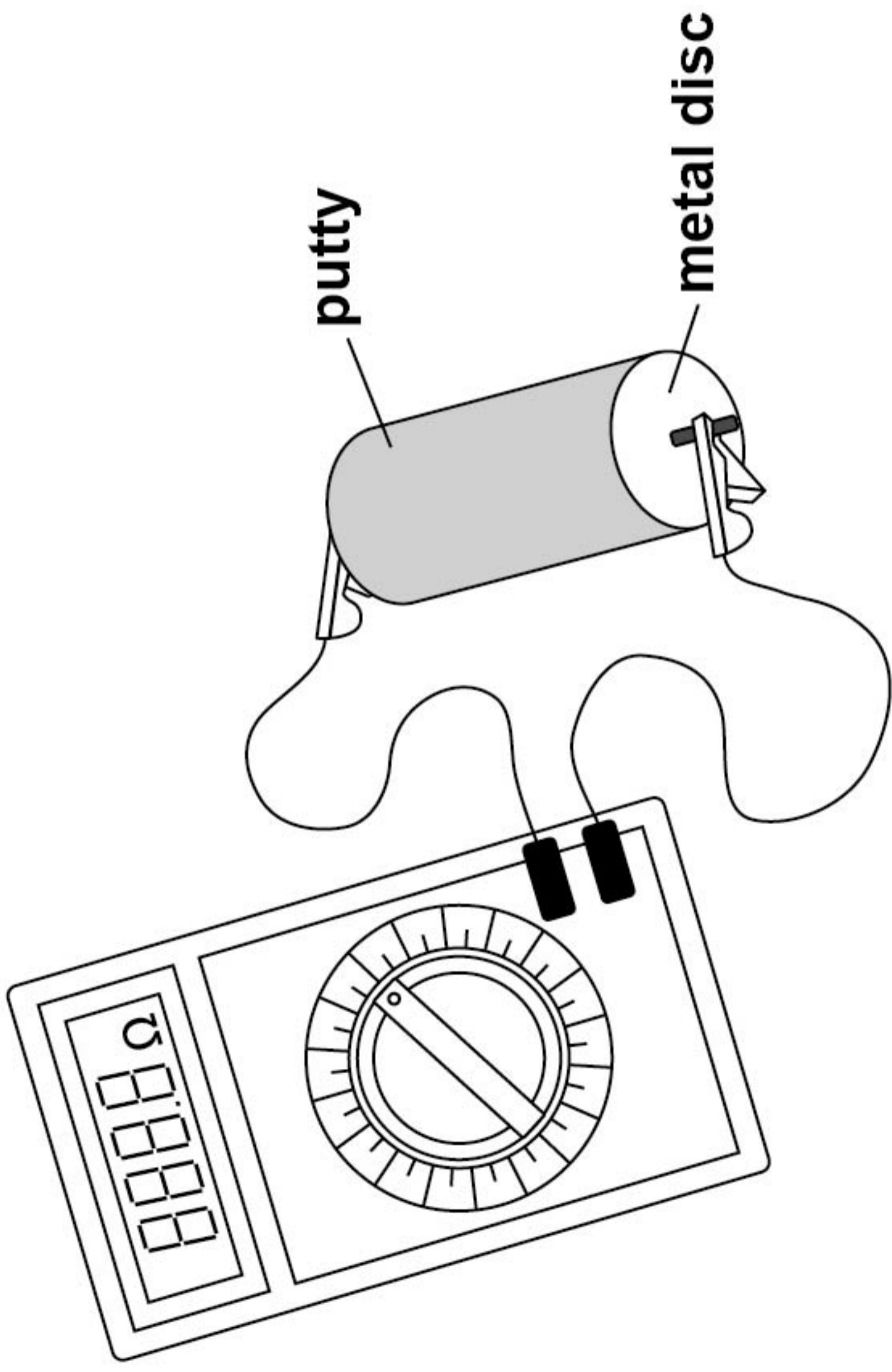
**A student is given some putty to form into cylinders.**

**To find the resistance of a cylinder, metal discs are placed in contact with the ends of the cylinder and connected to a resistance meter.**

**FIGURE 7, on the opposite page, shows the apparatus.**



**FIGURE 7**



**[Turn over]**

FIGURE 8

 $R / \Omega$ 

35

30

25

20

15

10

5

0

0

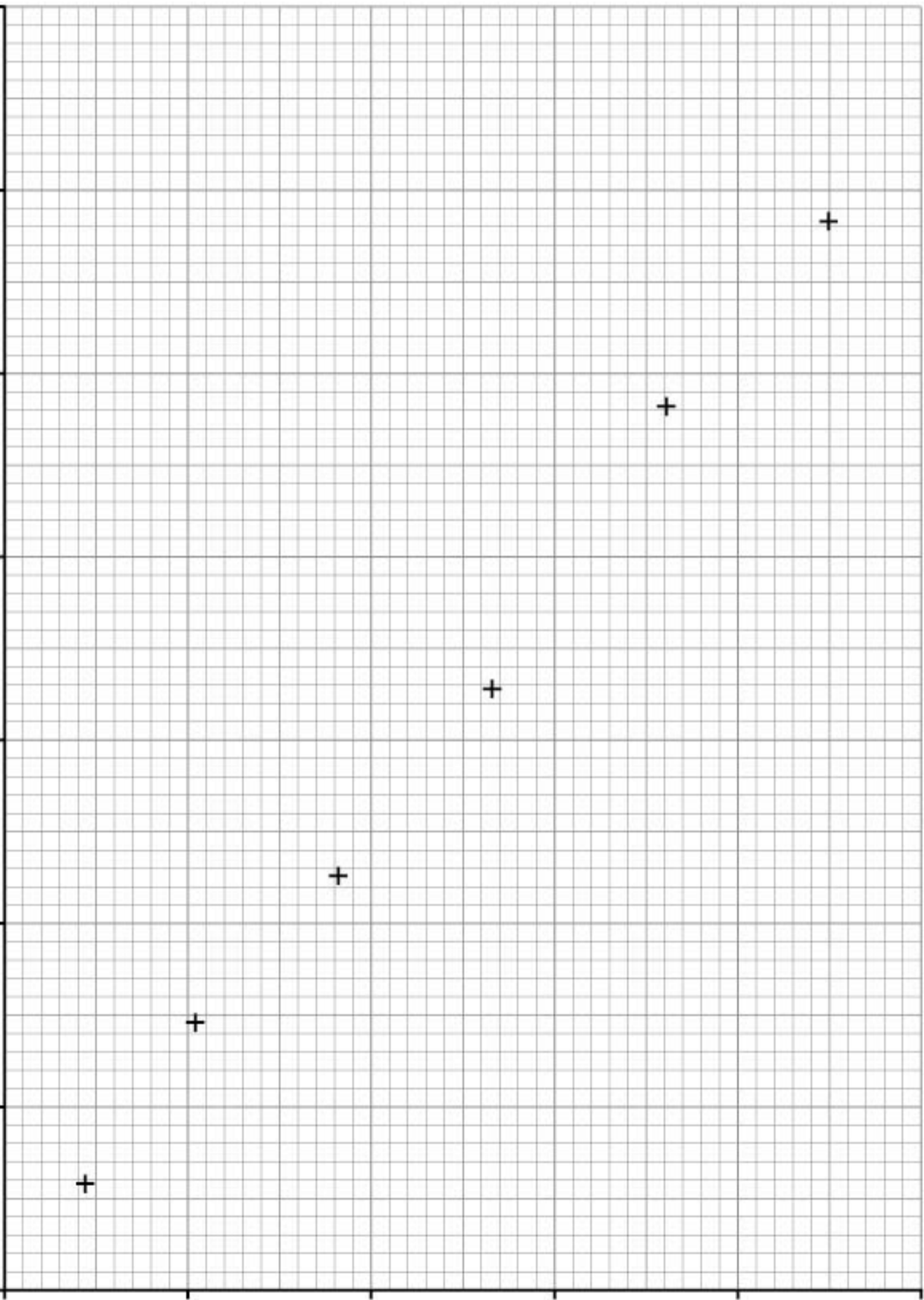
10

20

30

40

50

 $L^2 / 10^{-3} \text{ m}^2$ 

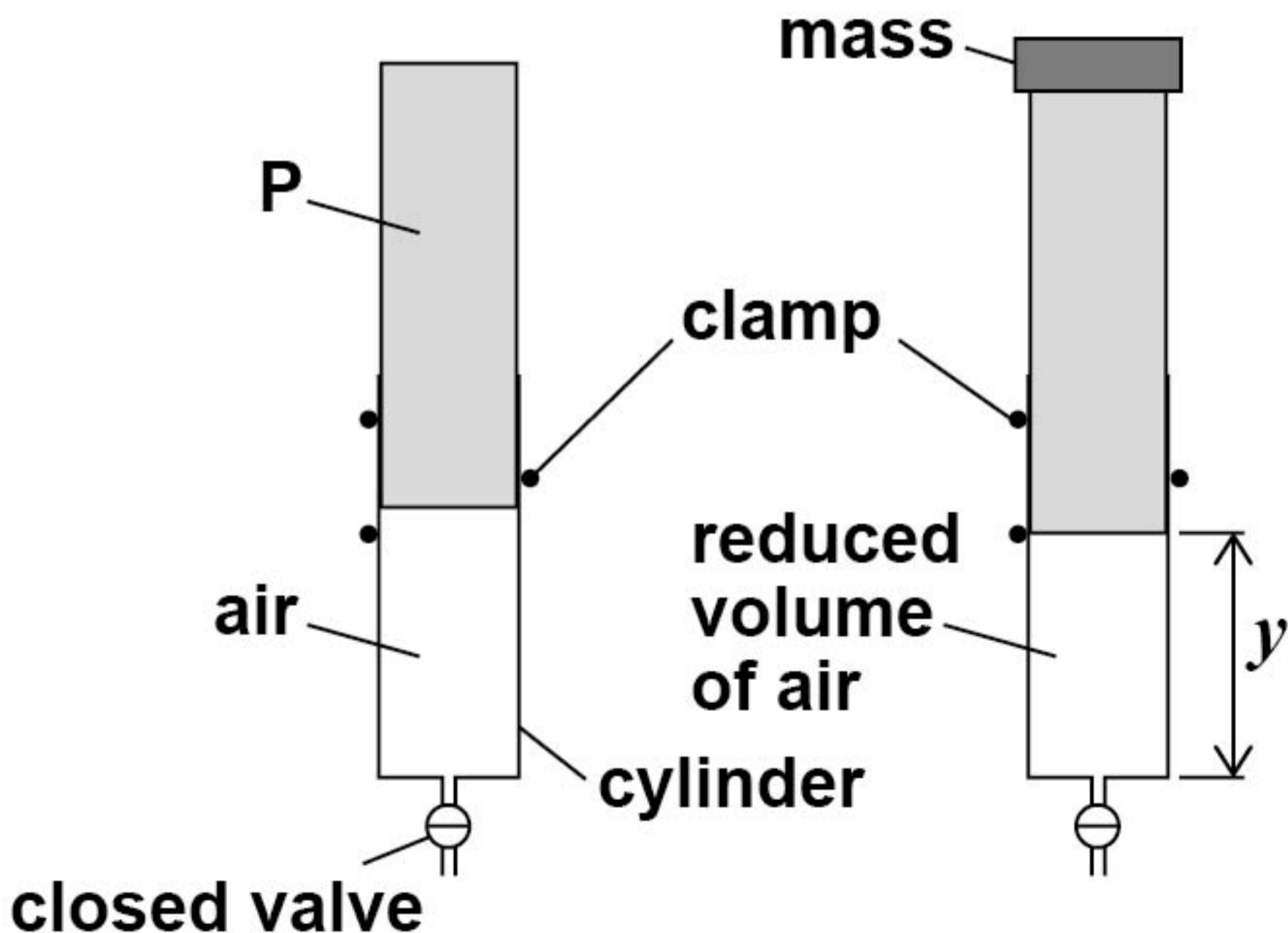
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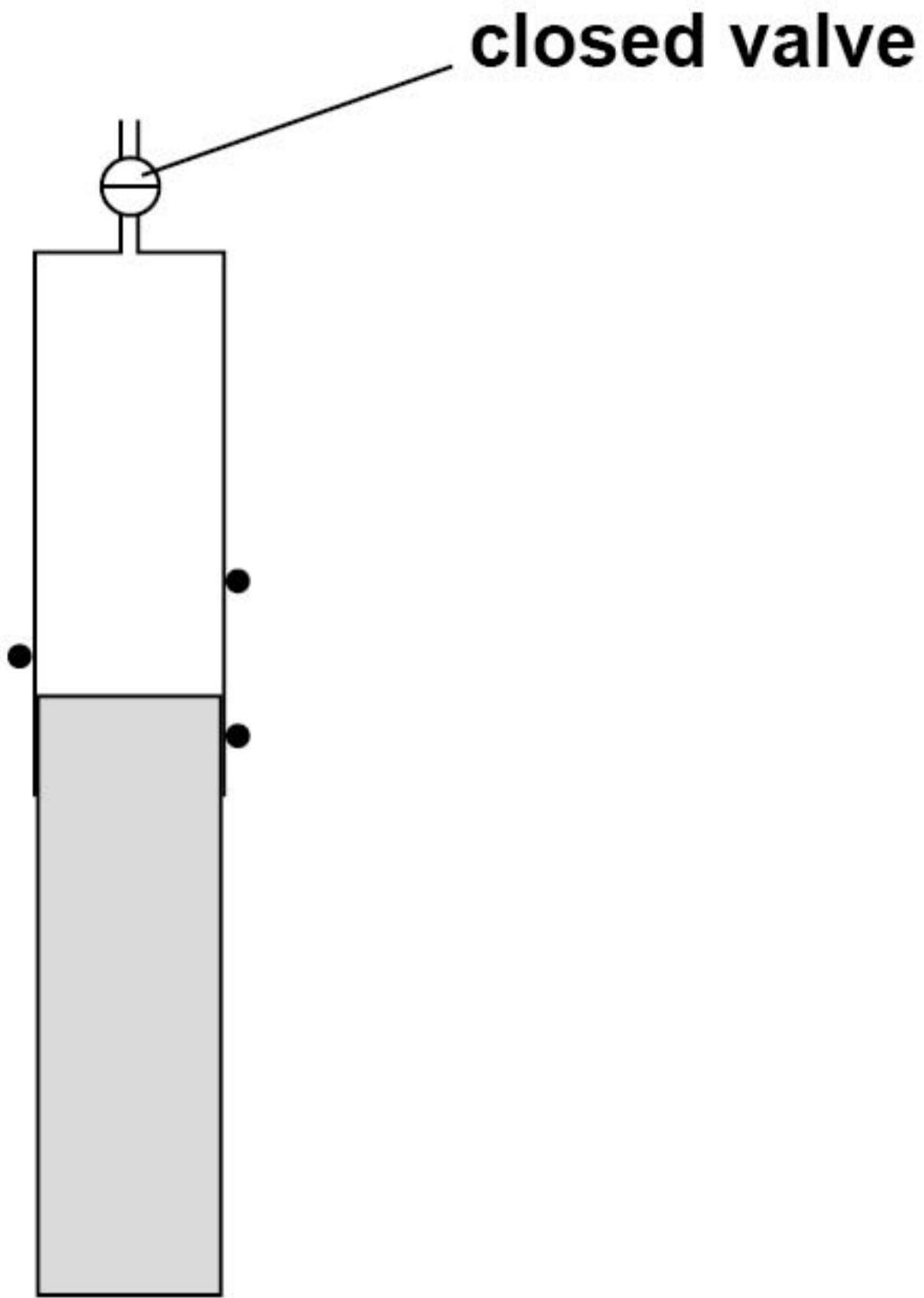
**FIGURE 9**

**FIGURE 9 shows air trapped in a vertical cylinder by a valve and a piston P. The valve remains closed throughout the experiment.**

**A mass is placed on top of P. P moves downwards and the volume of the trapped air decreases. There are no air leaks and there is no friction between the cylinder and P.**



**FIGURE 11**

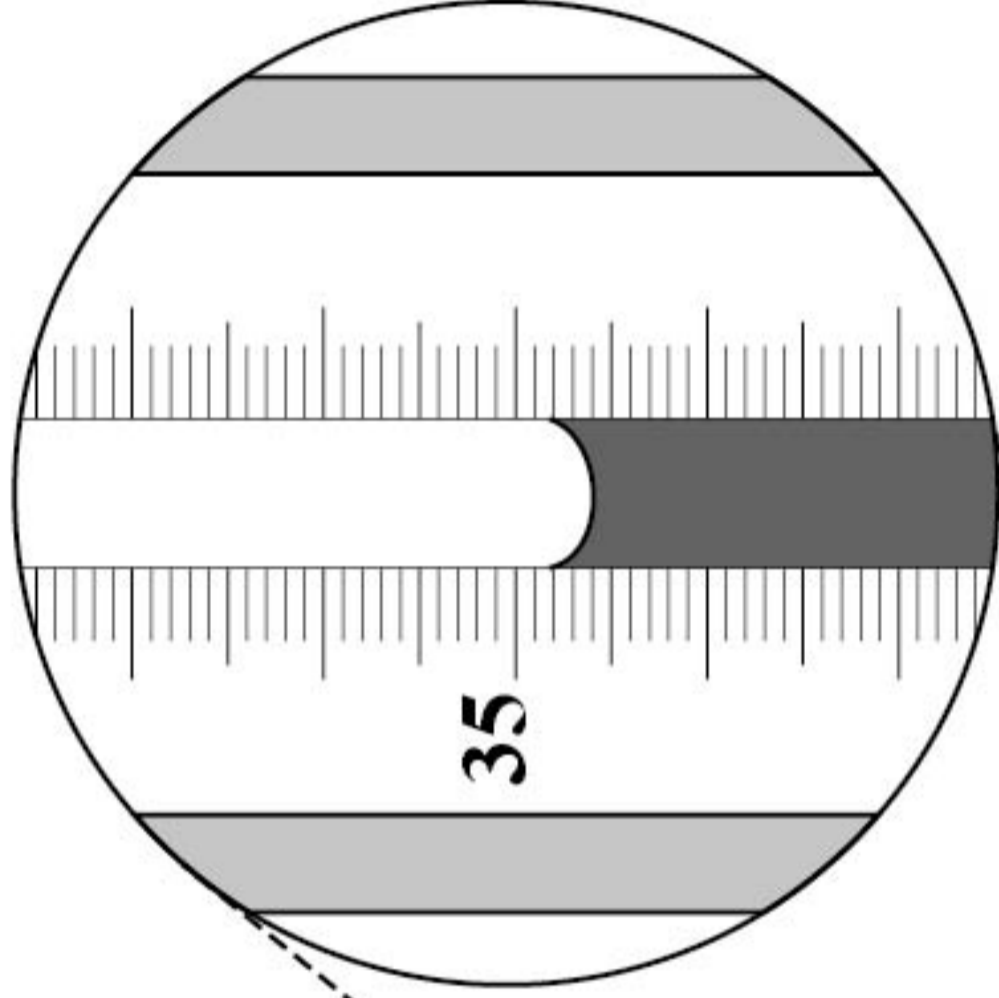


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## **FIGURE 12**

**FIGURE 12, on the opposite page, shows apparatus used in schools to investigate Boyle's law.**

ENLARGED VIEW

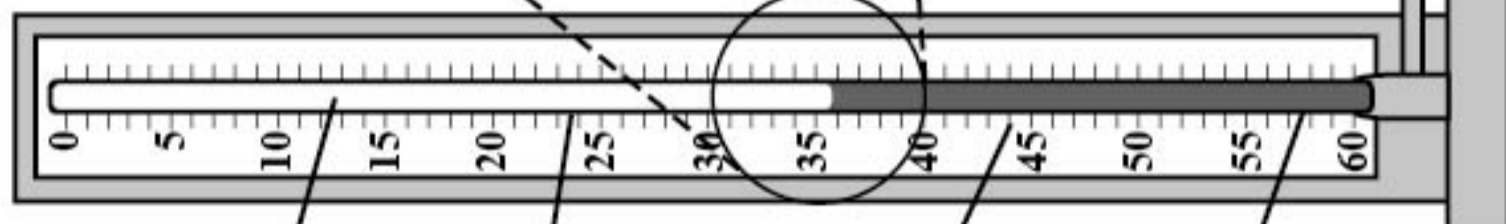


trapped  
air

glass  
tube

scale

coloured  
oil

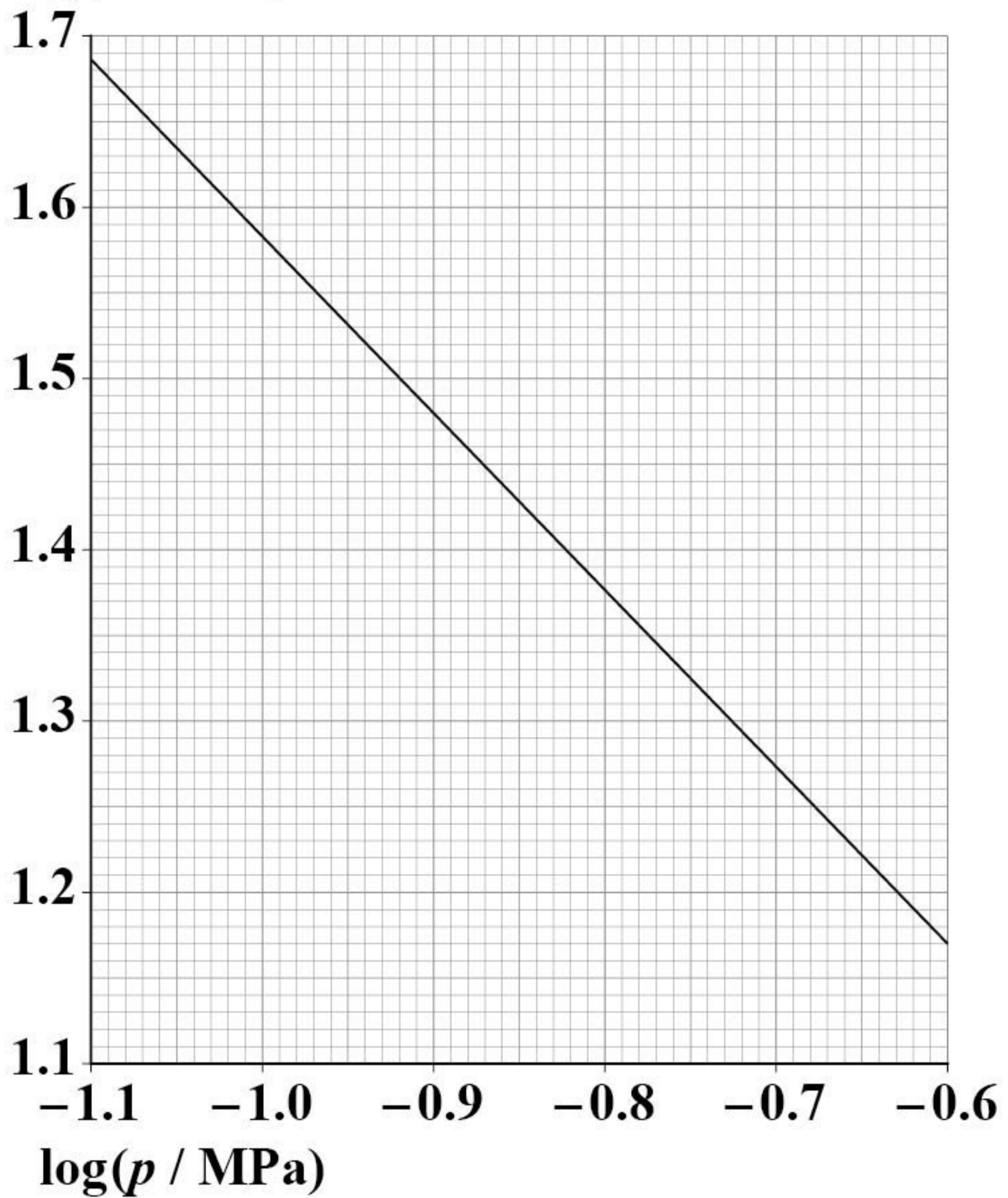


pressure gauge

to pump

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FIGURE 13

 $\log(V / \text{cm}^3)$ 

END OF DIAGRAMS



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