LOADING OF A METER RULE

1 The IGCSE class is investigating the loading of a metre rule.

Fig. 1.1 shows the apparatus.
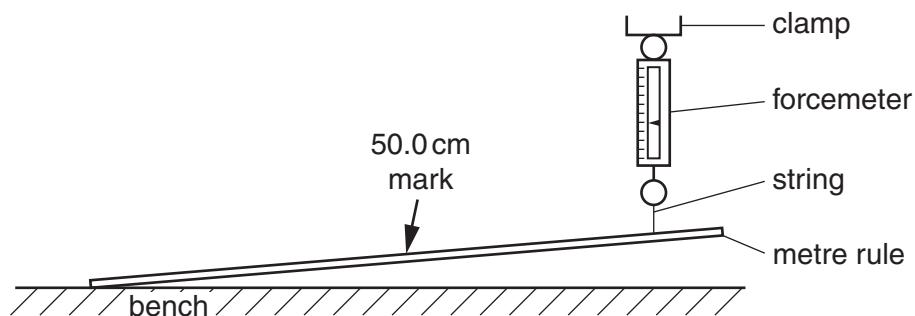

Fig. 1.1

(a) A metre rule is attached at one end to the bench. The other end is supported by a forcemeter.

A student records in Table 1.1 the reading F on the forcemeter.

He places a 100 g mass on the rule at the 50.0 cm mark and records in the table the value of the reading F on the forcemeter. He repeats the procedure using masses of 200 g, 300 g, 400 g and 500 g. The forcemeter readings are shown in the table.
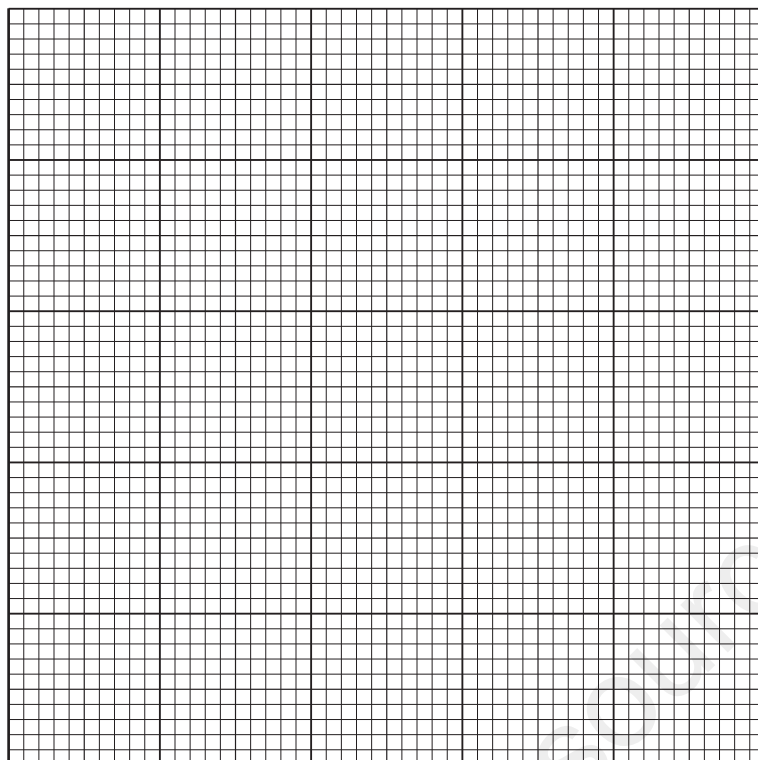
Write the mass values in the table.

Table 1.1

m/g	F/N
0	1.10
	1.85
	2.20
	2.95
	3.50
	4.20

[1]

(b) Plot a graph of F/N (*y*-axis) against m/g (*x*-axis).

[5]

(c) Use the graph to find the value of F when m = 375 g. Show clearly on the graph how you obtained the result.

F = ...[2]

(d) The forcemeter shows a reading when no mass has been added to the metre rule. Assuming that the forcemeter has no zero error, suggest a reason for the reading.

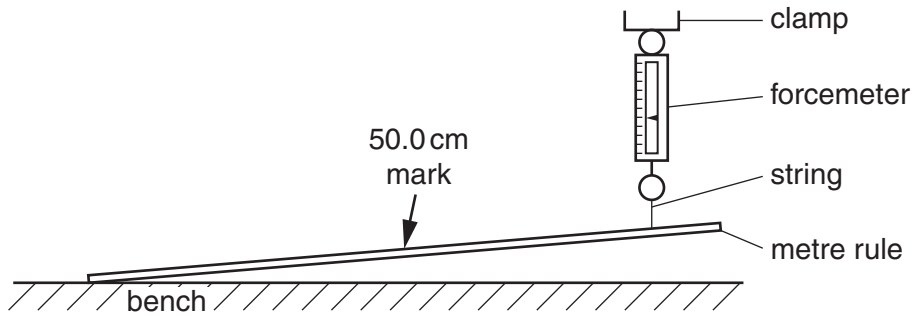..

....[1]

[Total: 9]

(a) 100, 200, 300, 400, 500 [1]

(b) Graph:
Axes labelled (label and unit) [1]
Scales suitable [1]
All plots correct to nearest ½ small square [1]
Continuous, straight, well-judged best fit line [1]
Thin line, neat plots [1]

(c) *F* correct from graph scale to ½ small square – <u>must see unit of N</u> [1]
Clear how obtained [1]

(d) Weight/mass/force of rule owtte [1]

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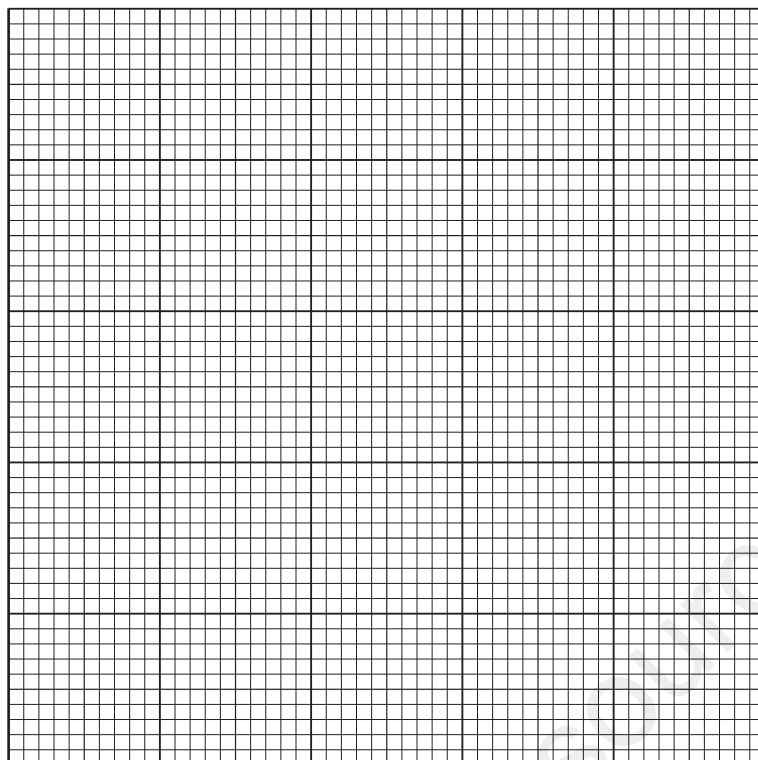
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