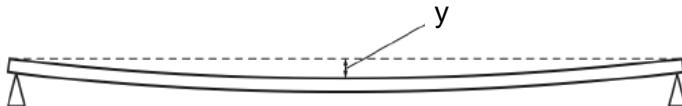


- 3 A ruler is supported horizontally by two pivots as shown.



The vertical displacement y at the centre of the ruler can be used to measure the mass loaded on it and is given by the equation

$$y = \frac{kML^3}{wt^3}$$

where

k is a constant,

L is the distance between the pivots,

M is the mass loaded onto the ruler,

t is the thickness of the ruler and

w is the width of the ruler.

When a particular M is loaded onto the ruler, the following results are obtained:

$$y = (0.25 \pm 0.01) \text{ mm}$$

$$L = (80.0 \pm 0.2) \text{ cm}$$

$$t = (6.0 \pm 0.1) \text{ mm}$$

$$w = (23.0 \pm 0.5) \text{ mm}$$

Which measurement contributes the most to the uncertainty of M ?

A y

B L

C t

D w