

**MARKS**

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1. Suppose that you are investigating the relationship between political attitudes and length of hair among male university students. You will measure political attitudes with a standard questionnaire; indicate briefly how you will measure hair length. Give clear instructions *in point form* that your assistant can follow, including a statement of the *units* of measurement and the *measuring instrument*.

Use a light rigid ruler (so it can be manipulated with *one* hand) long enough (e.g., 60 cm) to cover male hair lengths and calibrated in millimetres.

**Comments**

1. On centre line of the scalp, select a group of about 10 hairs at the *front* hair line.
2. Place zero of ruler on scalp at hair roots and perpendicular to scalp surface; stretch group of hairs to reasonable tension and record its 'average' length, if possible to the nearest millimetre.
3. Repeat steps 1 and 2 in *centre* of top of scalp.
4. Repeat steps 1 and 2 at *rear* hair line.
5. Repeat steps 1-4 a second time.
6. Record data as it is gathered in a standard table already set up with proper headings and labels which identify the different measurements on each person.
7. Ask for date of last haircut and record today's date.
8. Ask for name and phone number in case there are follow-up questions about the data for a particular person.

Don't rely on the length of a *single* hair.  
 Try to *standardize* measuring system to reduce measurement error.  
 Use *more than one defined* location on scalp.  
 Take *repeated* measurements.  
*Systematic, planned* data recording.  
 Possible allowance for cutting.  
 Allow for possibility of *follow-up*.

mm  
Units

60 cm light rigid ruler  
Measuring instrument

**MARKS**

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(3, 2)

2. You want to compare the 'size' of several statistics textbooks.
  - (a) Give three (3) possible numerical variates that make precise the vague idea of the 'size' of a book; for each variate, give the *units* of measurement and the *measuring instrument* required.
  - (b) Explain briefly which variate is most appropriate for estimating how long it would take you to read the book; for deciding whether it would fit into your bag.

(a) (1) Height or width or thickness  
Variate

cm  
Units

Ruler  
Measuring instrument

(a) (2) Weight  
Variate

grams  
Units

Balance or scale  
Measuring instrument

(a) (3) Number of pages, words or chapters  
Variate

integer  
Units

Counting  
Measuring instrument

(b) Read: Variates of type (3) would be most appropriate for reading, because they measure the *content* of a book.

(b) Fit in bag: Variates of type (1) would be most appropriate for fitting in a bag, because they measure the *physical dimensions* of a book.