

Premedical course Self-assessment test

1. *What do you understand by:*

- a. **cumulative probability distribution function** a function which gives the probability that a variable is less than value at which the function is evaluated

- b. **accuracy** a measurement is accurate if it does not suffer from bias

- c. **blindness (as applied to clinical trials)** it can mean the subject does not know which treatment he is receiving or the assessor does not know (double blind implies both of these)

- d. **a factorial experiment** this means studying the effects of two or more treatments simultaneously

- e. **blocking** this means assessing treatments within homogeneous groups

- f. **stratification** this is similar to blocking but the term is usually applied to sample surveys or allocation in clinical trials, whereas blocking is applied to experiments

- g. **a time series** any variable which is observed regularly gives rise to a time series

- h. **a stem-leaf plot** this is shaped like a histogram but contains the original data: the stem is the most significant part of the data value and the leaf the least significant

- i. **the median of a distribution** this is the middle value if the data are sorted (or the average of the middle two if the sample size is even)

- j. **the inter-quartile range** the difference between the 75th and 25th centiles

- k. **Simpson's paradox** the reversal of a relationship by a 'lurking variable'

2. *True or false?*

- a. The standard deviation measures the spread of a set of measurements. true
- b. In a Normal distribution 68% of the observations lie between the mean minus two standard deviation and the mean plus two standard deviations. false (± 1 sd)
- c. The median of a distribution is always a whole number. false
- d. A clinical trial is an example of a prospective investigation. true

3.

- a. What do the lines on the “box” part of a box and whisker plot mean? they represent the median and upper and lower quartiles
- b. How would you assess whether or not a variable had a Normal distribution? the best way is to use a Normal probability plot or Normal quantile plot.

4. Write down 8 things you can do in MINITAB. (i) enter data (ii) create new variables from old (iii) draw boxplots (iv) draw stem-leaf plots (v) draw scatterplots (vi) plot time series (vii) find basic descriptive statistics (viii) find the proportion of observations between two values if the observations are Normally distributed.

5. Give five characteristics an association between two variables might be required to have before a causal relationship could be established. the association should be (i) consistent with other facts and (ii) should be specific; (iii) the putative cause should precede the effect (iv) the greater the strength of the association the more likelihood of it being causal (v) the greater the exposure to risk the greater the likelihood of disease.

<i>Question</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Total</i>
<i>Marks</i>	<i>24</i>	<i>4</i>	<i>4</i>	<i>8</i>	<i>10</i>	<i>50</i>