And data interpretation

Science, Biology

4BBY1060: Statistics and Data Interpretation This work is worth 10% of the module marks Using MS Word, or clear hand-writing, enter your answers to questions in the spaces provided. Insert all tables at the end of the document, making sure they are properly labelled and have appropriate legends. When complete, print the coursework and attach your CYO coversheet to the front (see the module booklet, p8 if you do not know how to do this). Also attach your hand-drawn histogram at the back, stapling everything together. The submission deadline is 2: 00 PM, 16th March. Guidance on the use of Excel can be found on the 4BBY1060 coursework tab.

Part A (cardiovascular data) [total 20 marks]:

The data is provided separately as an Excel spreadsheet entitled ' cardiovascular data' on the 4BBY1060 module website ' coursework' tab. It will show: systolic BP and diastolic BP taken from the same set of subjects either while supine or standing.

Answer all parts of the question

1). What is the formula for calculating mean arterial blood pressure (MABP)? [1 mark]

2). Using Excel, calculate three new columns, giving for each subject their MABP supine and standing and their increase in MABP when standing rather than lying supine. From the new columns, again using Excel, calculate, for the whole class, and for males and females separately, the mean, SD and SEM for MABP for supine and standing positions and for the increase in MABP. You do not need to print your columns of raw data.

Present all these summaries, including the numbers of subjects and units of measurement, in a single table. It should also include a title and a legend which states briefly how the experimental data were obtained (i. e. summarises what was done in the practical). Round the values up to an appropriate number of decimal places.

[4 marks]

WHOLE CLASS

Supine systolic

Supine diastolic

Standing systolic

Standing Diastolic

MABP Supine

MABP standing

MABP increase

MEAN

119. 8064516

69. 6344086

125. 4086022

78. 83870968

86. 35842294

94. 36200717

8. 003584

SD

13. 55284188

9. 485440727

15. 28585348

11. 05646606

9. 401566906

11. 0547229

7. 232925

SEM

1. 405364236

0. 983594384

1. 585069167

1. 146502122

0. 974897074

1. 146321364

0. 750019

FEMALE

MEAN

114. 36

69. 34

117. 14

76. 3

84. 34666667

89. 91333333

5. 566667

STDEV

10. 94841336

9. 560996447

11. 29025225

9. 729504885

9. 011194852

9. 090078317

6. 144979

SEM

1. 548339466

1. 352129085

1. 596682786

1. 375959776

1. 274375397

1. 285531204

0. 869031

FEMALE

MEAN

126. 1395349

69. 97674419

135. 0232558

81. 79069767

88. 69767442

99. 53488372

10. 83721

SD

13. 64268755

9. 498090966

13. 67738553

11. 86342547

9. 405282191

10. 96968877

7. 433078

SEM

2. 080490347

1. 448445293

2. 085781739

1. 809155423

1. 434292088

1. 672861854

1. 133534

3). Complement the numerical statistics with a graphical display: From the MABP increase values, construct a grouped frequency table for the whole class, showing the frequency and percentage frequency at 5 mmHg intervals. Remember that % values should add up to 100. Draw by hand the histogram. It is normal in biosciences for these to be plotted as percentage frequency, NOT % freq density. Remember to label the axes and intervals and include a title or legend so that the graph is readily understandable. [4 marks]

Interval

Frequency

cumulative frequency

0