12 Further Maths – Data Analysis - Univariate (Work Plan)

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| **Skill** | **Practice** | **Resources** | **Learning Focus** |
| Data Types | Ex 1 A Page 5  All Questions | <https://www.youtube.com/watch?v=2zSYAlonQIQ>  <https://www.youtube.com/watch?v=GlgA8OMgLxE> | review of types of data |
| Displaying distributions of categorical data | Ex 1 B Page 11  All Questions | <https://www.youtube.com/watch?v=LEXbMW-Amao>  <https://study.com/academy/lesson/what-is-a-stacked-bar-chart.html>  <https://www.youtube.com/watch?v=khP3ge7a2Yk> | review of representation, display and description of the distributions of categorical variables: data tables, two-way frequency tables and their associated segmented bar charts  use of the distribution/s of one or more categorical variables to answer statistical questions |
| Displaying distributions of numerical data | Ex 1 C Page 24  All Questions | <https://www.youtube.com/watch?v=amLYLq73RvE>  <https://www.youtube.com/watch?v=RWP2q4wyRds>  <https://www.youtube.com/watch?v=myQfnagD9XU> | review of representation, display and description of the distributions of numerical variables: histograms |
| Using a log scale to display data | Ex 1 D Page 34  All Questions | <https://www.youtube.com/watch?v=JcIexOz9O3A> | the use of a log (base 10) scale to display data ranging over several orders of magnitude and  their interpretation in powers of ten |
| Dot plots and stem plots | Ex 2 A Page 45  All Questions | <https://www.youtube.com/watch?v=_7m0Q_m2ppg>  <https://www.youtube.com/watch?v=_zurDAF1Fw4> | review of representation, display and description of the distributions of numerical variables: dot plots, stem plots |
| Median, range IQR | Ex 2 B Page 51  All Questions | <https://www.youtube.com/watch?v=iAmaoAEyTLA> | summary of the distributions of numerical variables; |
| Five-figure summary and box plot | Ex 2 C Page 59  All Questions | <https://www.youtube.com/watch?v=omOSu7_Z22o>  <http://www.classpad.com.au/cp2/index.php?me=BA4&mn=401>  <http://www.classpad.com.au/cp2/index.php?me=BA4&mn=403>  <http://www.classpad.com.au/cp2/index.php?me=BA4&mn=404>  <http://www.classpad.com.au/cp2/index.php?me=BA4&mn=405> | summary of the distributions of numerical variables; the five-number summary and boxplots (including the use of the lower fence (Q1 – 1.5 × IQR) and upper fence (Q3 + 1.5 × IQR) to identify and display possible outliers) |

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| Relating box plot to shape | Ex 2 D Page 63  All Questions | <https://www.khanacademy.org/math/ap-statistics/summarizing-quantitative-data-ap/stats-box-whisker-plots/v/interpreting-box-plots>  <https://www.khanacademy.org/math/ap-statistics/summarizing-quantitative-data-ap/stats-box-whisker-plots/v/judging-outliers-in-a-dataset>  <https://www.youtube.com/watch?v=L68iieC2Vgc> | Skew and the effect of outliers |
| Using box plots to describe and compare | Ex 2 E Page 45  All Questions | <https://www.youtube.com/watch?v=Q2OF86ZUYMs>  <https://www.youtube.com/watch?v=eUkgf-2NVO8> | use of the distribution/s of one or more numerical variables to answer statistical questions |
| Centre and spread of symmetric distributions | Ex 2 F-1 Page 69  All Questions  Ex 2 F-2 Page 73  All Questions | <https://www.youtube.com/watch?v=GUHH0h51DAc>  <https://www.youtube.com/watch?v=VpQVQv5DSe8>  <https://www.khanacademy.org/math/ap-statistics/summarizing-quantitative-data-ap/measuring-spread-quantitative/v/mean-and-standard-deviation-versus-median-and-iqr> | the sample mean and standard deviation and their use in comparing data distributions in terms of centre and spread |
| Normal distribution and the 68-95-99.7% rule | Ex 2 G Page 77  All Questions | <https://www.statisticshowto.datasciencecentral.com/68-95-99-7-rule/>  <https://www.youtube.com/watch?v=cgxPcdPbujI>  <https://www.statisticshowto.datasciencecentral.com/probability-and-statistics/normal-distributions/> | the normal model for bell-shaped distributions and the use of the 68–95–99.7% rule to estimate percentages and to give meaning to the standard deviation |
| Standard scores | Ex 2 H Page 82  All Questions | <https://www.youtube.com/watch?v=HJHiBI9kUMQ>  <https://www.youtube.com/watch?v=mFYvUxOO2T4> | standardised values (z-scores) and their use in comparing data values across distributions |
| Population and samples | Ex 2 I - Handout  All Questions | <https://www.youtube.com/watch?v=eIZD1BFfw8E>  <https://www.youtube.com/watch?v=nzxjLbENmRw>  <https://www.youtube.com/watch?v=DEMewcYYTQw> | population and sample, random numbers and their use to draw simple random samples from a population or randomly allocate subjects to groups, the difference between population parameters (e.g., *μ* and σ ), sample statistics (e.g., *x* and *s*). |
| Review | Pages 36-40  Pages 85-90 |  |  |

Classpad help videos: <http://www.classpad.com.au/cp2/index.php?me=BA4&mn=400>