

# Y11 Work for prospective Y12 core maths students

## Please complete these tasks in preparation for Year 12 Core

### Maths

#### **Paper 1 – Relevant Hegarty tasks in brackets**

##### Percentages and Risk:

- Calculate percentages of amounts including % increase and decrease. (90, 87)
- Use a multiplier for simple and repeated percentage change. (89, 92, 91)
- Calculate percentage change and reverse percentages. (97, 96)
- Identify risk as a '1 in n' chance of happening. (331)
- Apply percentages to tasks involving money, interest and depreciation. (93, 94, 95)

##### Estimation:

- Standard calculator skills using roots, powers etc. (129)
- Estimate answers by rounding each part of an equation to 1 sf. (131)
- Calculate and work with error bounds. (774 – 777)

##### Formulae:

- Be able to write a formula from a given text. (176)
- Rearrange formulae to change the subject of the formula. (280-286)
- Calculate using a formula. (287, 278, 279)

##### Graphs:

- Plot linear graphs from a simple formula. (206, 895)
- Use displacement-time and speed-time graphs including what the gradient represents. (874-879, 882, 884, 885)
- Calculate gradients of linear graphs and using context. (894, 897)
- Draw a tangent to a curve and calculate gradient at a point. (889)

##### Standard form:

- Freely move between number form and standard form. (122-124)
- Calculate using standard form. (125-128)

##### Measures and Scaling:

- Work with scale factors for length, area and volume. (614 - 621)
- Convert units, especially those used in maps. (865-867)
- Be able to draw plans and elevations for 3D objects. (837-844)

##### Exponentials:

- Be able to represent exponential growth and decay on a graph. (302, 800, 801, 804-811)
- Calculate using an exponential formula. (796-798)

##### Probability:

- Identify possibility spaces and calculate probabilities of outcomes. (359)

- Use frequency trees to calculate relative frequencies and probability trees to calculate probabilities for independent and dependent events, including conditional probability. (361-369)
- Fill in missing values in two-way tables and use these to calculate relative frequencies (also links in to stratified sampling in paper 2). (422-424)

### **Statistics:**

- Recognise the difference between discrete and continuous data. (393)
- Plot scatter graphs and be able to identify outliers from bivariate data. (453, 454)
- Calculate means and be able to use weighted means. (408, 417, 418)
- Be able to draw dot plots, bar charts, pie charts, boxplots, and cumulative frequency graphs and interpret them also. (434-436, 440, 437-439, 427-429)

## **Paper 2**

### **Measures of location and spread:**

- Using range and interquartile range to compare consistency of data. (412)
- Using measures of central tendency to compare data. (440, 436, 413)

### **Linear Transformations:**

- How does increasing/decreasing every value by a set amount effect the average and spread?
- How does increasing/decreasing every value by a proportion effect the average and spread?
- What about both? (419-421)

### **Sampling methods:**

- Recognise different sampling methods from a description of how data collected. Main ones are random, stratified, opportunity, systematic, cluster. (395)
- Calculate values for a stratified sample. (396-398)
- Comment on improvements that can be made to sampling techniques in context. (394)