



**SUBJECT: Maths and Numeracy  
Learning Plan 2**

**Set: Year 10P1 Higher tier**

**Knowledge Focus**

**Statistics: Probability, sampling.**

**Algebra: Simultaneous equations, non linear graphs.**

**Geometry and measure: Circle theorems.**

If you are having trouble completing your MathsWatch homework, speak to your maths teacher as soon as possible. You can do this either in your lesson or through Teams.

**Skills, Knowledge and Understanding to be developed:**

- Relative frequency.
- Collect data including sampling methods.
- Form and solve simultaneous equations graphically.
- Form and solve simultaneous equations algebraically.
- Draw and interpret non linear graphs.
- Understand and use circle theorems.

**Key Terms to be learned:**

Statistics

Mutually exclusive, fair, outcome, event, probability, chance, likelihood, impossible, certain, trials, even chance, likely, unlikely, relative frequency, experiment, theoretical probability, estimate, bias, primary data, statistics, sample, population, secondary data, representative, conclusions, outliers, population, anomalies, questionnaire, systematic sampling, sample size, limitations, reliable, survey, pilot survey.

Algebra

Simultaneous, equation, unknown, inequality, graph, intersection, solution, unknown, solve, value, substitute, linear, quadratic, cubic, non linear, linear, coefficient, power, exponential Graph, coordinates, function, table of values, plot, axes, general form, symmetrical, reciprocal, parabola, maximum, minimum, cubic, expression.

Geometry and Measure: Circle, circumference, radius, diameter, centre, tangent, chord, proof, bisect, sector, cyclic quadrilateral, perpendicular, geometrical, subtended, segment, arc, alternate segment, congruent, semi-circle, isosceles, subtend.

**Week 1 Learning Objectives:**

Additional Content for Mathematics only

- Estimating the probability of an event as the proportion of times it has occurred.
- Relative frequency.
- An understanding of the long-term stability of relative frequency is expected.
- Graphical representation of relative frequency against the number of trials.
- Estimating probabilities based on experimental evidence.
- Comparing an estimated probability from experimental results with a theoretical probability.

➤ [Mathswatch clip 117.](#)



**Objective assessments:**

Completion of exam style questions on experimental probability.

**Homework:**

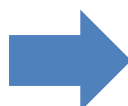
Suitable Mathswatch questions set by teacher on experimental probability.

**Week 2 Learning Objectives:**

Numeracy and Mathematics

- Apply random, systematic and stratified sampling techniques to collect data to represent a population.
- Conduct a mini statistical project: Write a statistical question as a hypothesis taking note of limitations such as the sample size, bias, anomalies and outliers.
- Identify and collect suitable data using a random stratified sampling method.
- Complete statistical calculations and draw an appropriate chart to test a hypothesis.
- Draw conclusions considering the effect of sample size and other factors that affect the reliability of conclusions drawn.

➤ [Mathswatch clips 159, 218.](#)



**Objective assessments:**

Completion of exam style questions on sampling.

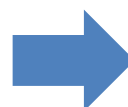
**Homework:**

Suitable Mathswatch questions set by teacher on sampling.

**Week 3 Learning Objectives:**

Additional Content for Mathematics only

- Form two simultaneous linear equations and solve using a graphical method.
- Form two simultaneous linear equations (where the coefficients of at least one pair of unknowns is the same) and solve using an algebraic (elimination) method.



**Objective assessments:**

Completion of exam style questions on simultaneous equations.

**Homework:**

Suitable Mathswatch questions set by teacher on simultaneous equations.



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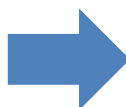
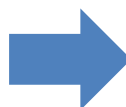
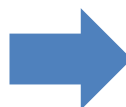
**Statistics: Probability, sampling.**

**Algebra: Simultaneous equations, non linear graphs.**

**Geometry and measure: Circle theorems.**

If you are having trouble completing your MathsWatch homework, speak to your maths teacher as soon as possible. You can do this either in your lesson or through Teams.

<ul style="list-style-type: none"> <li>Form two simultaneous linear equations (where neither of the unknowns has the same coefficient) and solve using an algebraic (elimination) method.</li> <li>Draw two or more straight line graphs to locate a region satisfying a set of linear inequalities.</li> </ul> <p>➤ <a href="#">Mathswatch clips 144, 171.</a></p>	
<p><b>Week 4 Learning Objectives:</b> <u>Additional content for Maths</u></p> <ul style="list-style-type: none"> <li>Distinguish between and sketch graphs of quadratics, reciprocals and cubics (of the form <math>y=ax^2 + b</math>, <math>y = \frac{a}{x}</math>, and <math>y = ax^3</math>)</li> <li>Draw and interpret graphs of the form <math>y = ax^2 + b</math>, <math>y = \frac{a}{x}</math>, and <math>y = ax^3</math> by completing a table of values.</li> <li>Draw and interpret graphs of the form <math>y = ax^2 + bx + c</math> and <math>y = ax^3 + b</math> by completing a table of values.</li> <li>Draw and interpret graphs of the form <math>y = ax + b + \frac{a}{x}</math> with <math>x</math> not equal to 0, <math>y = ax^3 + bx^2 + cx + d</math> and <math>y = k^x</math> for integer values of <math>x</math> and simple positive values of <math>k</math>.</li> <li>Draw and interpret non-linear graphs when <math>y</math> is given implicitly in terms of <math>x</math>.</li> </ul> <p>➤ <a href="#">Mathswatch clips 133 and 198.</a></p>	<p><b>Objective assessments:</b></p> <p>Completion of exam style questions on non linear graphs.</p> <p><b>Homework:</b></p> <p>Suitable Mathswatch questions set by teacher on non linear graphs.</p>
<p><b>Week 5 Learning Objectives:</b> <u>Additional content for Maths</u></p> <ul style="list-style-type: none"> <li>Apply the following circle theorems to determine lengths and angles (combining Pythagoras and trig ratios).</li> <li>Two tangents to a circle from an external point are equal in length.</li> <li>The tangent at any point on a circle is perpendicular to the radius at that point.</li> <li>The angle subtended by an arc at the centre of a circle is twice the angle that it subtends at any point on the circumference.</li> <li>The angle subtended at the circumference in a semicircle is a right angle.</li> <li>Angles in the same segment of a circle are equal.</li> <li>The opposite angles of a cyclic quadrilateral add up to <math>180^\circ</math>.</li> <li>The perpendicular from the centre to a chord bisects the chord.</li> <li>The alternate segment theorem.</li> <li>Understand and construct geometrical proofs using circle theorems.</li> </ul> <p>➤ <a href="#">Mathswatch clips 181 and 212.</a></p>	<p><b>Objective assessments:</b></p> <p>Completion of exam style questions on circle theorems.</p> <p><b>Homework:</b></p> <p>Suitable Mathswatch questions set by teacher on circle theorems.</p>
<p><b>Weeks 6 and 7 Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>Revision of course to date.</li> <li>Completion of Summative Assessment in examination conditions.</li> <li>Bespoke feedback from SA.</li> <li>Topic improvement tasks.</li> </ul>	<p><b>Objective assessments:</b></p> <p>Completion of summative assessment.</p> <p><b>Homework:</b></p> <p>Suitable Mathswatch questions set by teacher.</p>



Summative Assessment and feedback.