

## Mathematics KS4

This is a linear course which is assessed by the means of one exam at the end of the three years (Years 9-11). The exam will be made up of three papers on three different days - one non-calculator and two calculator.

The course has three assessment objectives. The percentages shown are the proportion of the exam dedicated to each objective.

|  | F    | H   |
|--|------|-----|
| AO1: Use and apply standard techniques                       | 50%  | 40% |
| AO2: Reason, interpret and communicate mathematically        | 25%  | 30% |
| AO3: Solve problems within mathematics and in other contexts | 25%  | 30% |
| <b>TOTAL</b>   | 100% |     |

**Exam Board:** Edexcel

**Exam Board website:** <http://qualifications.pearson.com/en/home.html>

**Specification:** Mathematics (1MA1)

### Useful Resources:

Mathswatch: <http://www.mayfieldschool.net/Student-learning>

Past Papers: [www.edexcel.com](http://www.edexcel.com)

Textbook: Edexcel GCSE (9-1) Mathematics Higher Student Book, ISBN: 9781447980209

Textbook: Edexcel GCSE (9-1) Mathematics Foundation Student Book, ISBN: 9781447980193

| Foundation |       |  |   |
|------------|-------|--|---|
| Unit       | Title | Estimated hours                            |   |
| <u>1</u>   | a     | Integers and place value                   | 6 |
|            | b     | Decimals                                   | 5 |
|            | c     | Indices, powers and roots                  | 7 |
|            | d     | Factors, multiples and primes              | 6 |
| <u>2</u>   | a     | Algebra: the basics                        | 8 |
|            | b     | Expanding and factorising single brackets  | 6 |
|            | c     | Expressions and substitution into formulae | 7 |
| <u>3</u>   | a     | Tables                                     | 7 |
|            | b     | Charts and graphs                          | 7 |
|            | c     | Pie charts                                 | 4 |
|            | d     | Scatter graphs                             | 6 |
| <u>4</u>   | a     | Fractions                                  | 7 |
|            | b     | Fractions, decimals and percentages        | 4 |
|            | c     | Percentages                                | 7 |
| <u>5</u>   | a     | Equations                                  | 7 |
|            | b     | Inequalities                               | 5 |
|            | c     | Sequences                                  | 7 |



|           |          |  |    |
|-----------|----------|--|----|
| <u>6</u>  | <u>a</u> | Properties of shapes, parallel lines and angle facts                                       | 10 |
|           | <u>b</u> | Interior and exterior angles of polygons   | 6  |
| <u>7</u>  | <u>a</u> | Statistics and sampling  | 4  |
|           | <u>b</u> | The averages   | 6  |
| <u>8</u>  | <u>a</u> | Perimeter and area   | 10 |
|           | <u>b</u> | 3D forms and volume  | 6  |
| <u>9</u>  | <u>a</u> | Real-life graphs   | 9  |
|           | <u>b</u> | Straight-line graphs   | 6  |
| <u>10</u> | <u>a</u> | Transformations I: translations, rotations and reflections                                 | 6  |
|           | <u>b</u> | Transformations II: enlargements and combinations  | 8  |
| <u>11</u> | <u>a</u> | Ratio  | 6  |
|           | <u>b</u> | Proportion   | 6  |
| <u>12</u> |          | Right-angled triangles: Pythagoras and trigonometry  | 6  |
| <u>13</u> | <u>a</u> | Probability I  | 5  |
|           | <u>b</u> | Probability II   | 9  |
| <u>14</u> |          | Multiplicative reasoning   | 7  |
| <u>15</u> | <u>a</u> | Plans and elevations   | 6  |
|           | <u>b</u> | Constructions, loci and bearings   | 10 |
| <u>16</u> | <u>a</u> | Quadratic equations: expanding and factorising   | 5  |
|           | <u>b</u> | Quadratic equations: graphs  | 4  |
| <u>17</u> |          | Circles, cylinders, cones and spheres  | 7  |
| <u>18</u> | <u>a</u> | Fractions and reciprocals  | 5  |
|           | <u>b</u> | Indices and standard form  | 6  |
| <u>19</u> | <u>a</u> | Similarity and congruence in 2D  | 7  |
|           | <u>b</u> | Vectors  | 7  |
| <u>20</u> |          | Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations | 5  |



| Higher    |  |                 |
|-----------|--|-----------------|
| Unit      | Title  | Estimated hours |
| <u>1</u>  | <u>a</u> Calculations, checking and rounding   | 7               |
|           | <u>b</u> Indices, roots, reciprocals and hierarchy of operations   | 8               |
|           | <u>c</u> Factors, multiples and primes   | 6               |
|           | <u>d</u> Standard form and surds   | 6               |
| <u>2</u>  | <u>a</u> Algebra: the basics   | 8               |
|           | <u>b</u> Setting up, rearranging and solving equations   | 8               |
|           | <u>c</u> Sequences   | 6               |
| <u>3</u>  | <u>a</u> Averages and range  | 7               |
|           | <u>b</u> Representing and interpreting data  | 8               |
|           | <u>c</u> Scatter graphs  | 5               |
| <u>4</u>  | <u>a</u> Fractions   | 8               |
|           | <u>b</u> Percentages   | 8               |
|           | <u>c</u> Ratio and proportion  | 8               |
| <u>5</u>  | <u>a</u> Polygons, angles and parallel lines   | 8               |
|           | <u>b</u> Pythagoras' Theorem and trigonometry  | 8               |
| <u>6</u>  | <u>a</u> Graphs: the basics and real-life graphs   | 7               |
|           | <u>b</u> Linear graphs and coordinate geometry   | 10              |
|           | <u>c</u> Quadratic, cubic and other graphs   | 8               |
| <u>7</u>  | <u>a</u> Perimeter, area and circles   | 8               |
|           | <u>b</u> 3D forms and volume, cylinders, cones and spheres   | 8               |
|           | <u>c</u> Accuracy and bounds   | 6               |
| <u>8</u>  | <u>a</u> Transformations   | 8               |
|           | <u>b</u> Constructions, loci and bearings  | 8               |
| <u>9</u>  | <u>a</u> Solving quadratic and simultaneous equations  | 8               |
|           | <u>b</u> Inequalities  | 6               |
| <u>10</u> | Probability  | 10              |
| <u>11</u> | Multiplicative reasoning   | 8               |
| <u>12</u> | Similarity and congruence in 2D and 3D   | 8               |
| <u>13</u> | <u>a</u> Graphs of trigonometric functions   | 6               |
|           | <u>b</u> Further trigonometry  | 10              |
| <u>14</u> | <u>a</u> Collecting data   | 6               |
|           | <u>b</u> Cumulative frequency, box plots and histograms  | 7               |
| <u>15</u> | Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics  | 8               |
| <u>16</u> | <u>a</u> Circle theorems   | 7               |
|           | <u>b</u> Circle geometry   | 6               |
| <u>17</u> | Changing the subject of formulae (more complex), algebraic fractions, solving equations arising from algebraic fractions, rationalising surds, proof | 8               |
| <u>18</u> | Vectors and geometric proof  | 10              |



|           |          |   |   |
|-----------|----------|---|---|
| <u>19</u> | <u>a</u> | Reciprocal and exponential graphs; Gradient and area under graphs | 8 |
|           | <u>b</u> | Direct and inverse proportion                                     | 8 |