Year 10 Higher Unit 1 – Powers and Roots

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| Unit 1 – Powers and Roots |   |   |
| 1.1 | Square number | The product when an integer is multiplied by itself |
| 1.2 | Cube number | The product when an integer is multiplied by itself twice |
| 1.3 | The first 15 square numbers are | 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225 |
| 1.4 | The first 5 cube numbers are | 1, 8, 27, 64, 125 |

 Year 10 Higher Unit 2 – surds and irrational numbers

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| Unit 2 – surds and irrational numbers |   |   |
| **No.** | **Question** | **Answer** |
| 2.1 | A surd is | An irrational root |
| 2.2 | $$\sqrt{a}×\sqrt{b}$$ | $$\sqrt{ab}$$ |
| 2.3  | $$\sqrt{\frac{a}{b}}$$ | $$\frac{\sqrt{a}}{\sqrt{b}}$$ |
| 2.4 | $$\sqrt{a}+\sqrt{a}$$ | $$2\sqrt{a}$$ |
| 2.5 | $$\sqrt{a}- \sqrt{a}$$ | 0 |
| 2.6 | $$\sqrt{a}×\sqrt{a}$$ | $$a$$ |
| 2.7 | ($\sqrt{a}+b)$($\sqrt{a} -b)$ | $$a -b²$$ |

Year 10 Higher Unit 3- Indices

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| Unit 3- Indices |   |   |
| 3.1 | $$                      a × a$$ | $a^{2}$ (“a squared”) |
| 3.2 | $$                  a × a× a$$ | $a^{3}$ (“a cubed”) |
| 3.3 | $$a × a× a × a $$ | $a^{4}$ (“a to the power of 4”) |
| 3.4 | $$\sqrt{25}$$ | “The square root of 25 is 5 or -5” |
| 3.5 | $$\sqrt[3]{64}$$ | “The cube root of 64 is 4” |
| 3.6 | Index | The power |
| 3.7 | $$a^{b}× a^{c}$$ | $$a^{b+c}$$ |
| 3.8 | When multiplying the same bases with coefficients…. | Add the powers and multiply the coefficients |
| 3.9 | $$\frac{a^{b}}{a^{c}}$$ | $$a^{b-c}$$ |
| 3.10 | $$\left(a^{b}\right)c $$ | $$a^{bc}$$ |
| 3.11 | $$a^{0}$$ | 1 |
| 3.12 | $$a^{-b}$$ | $$\frac{1}{a^{b}}$$ |
| 3.13 | $$a^{\frac{b}{c}}$$ | $$\sqrt[c]{a}b$$ |

Year 10 Higher Unit 4 – Standard Form

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| Unit 4 – Standard Form |   |   |
| 4.1 | Standard form | A way of writing very big or very small numbers using powers of 10 |
| 4.2 | 10-2 | 0.01 |
| 4.3 | 10-1 | 0.1 |
| 4.4 | 100 | 1 |
| 4.5 | 101 | 10 |
| 4.6 | 102 | 100 |
| 4.7 | 103 | 1000 |
| 4.8 | 0.0004  | 4 x 10-4 (the number must be between 1 and 10) |
| 4.9 | 40000 | 4 x 104 (the number must be between 1 and 10) |

Year 10 Higher Unit 5 - Sequences

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| **Unit 5 - Sequences** |   |   |
| **No.** | **Question** | **Answer** |
| **5.1** | A sequence or series is | A list of numbers that follow a pattern |
| **5.2** | Term | A value in a sequence |
| **5.3** | The term-to-term rule | Is how you find the next term in the sequence |
| **5.4** | The nth term rule | Is a formula that can be used to generate any term in the sequence, this is sometimes called the position to term rule |
| **5.5** | **n** | The position of a term in the sequence |
| **5.6** | In a linear or arithmetic sequence | The difference between the terms is always the same |
| **5.7** | In a geometric sequence | Multiply by a common ratio to get to the next term |
| **5.8** | In a Fibonacci sequence | Add the two previous terms to get the next term |
| **5.9** | The triangular number sequence | A sequence of numbers generated by adding one more than was added to find the previous term. For example, 1, 3, 6, 10, 15, 21, ... |
| **5.11** | In a quadratic sequence | There is a common second difference |
| **5.12** | The nth term rule for geometric sequence is always in the form | $$axb^{n-1}$$ |
| **5.13** | a | First term in a geometric sequence |
| **5.14** | b | Common ration |
| **5.15** | Common ratio | The ratio between two consecutive terms in a sequence |
| **5.16** | The nth terms of quadratic sequences are written in the form | $$ax^{2}+bx+c$$ |