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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Trigonometry** |
| 1. Exact Values for Angles in Trigonometry | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **0°** | **30°** | **45°** | **60°** | **90°** | | **sin** | **0** |  |  |  | **1** | | **cos** | **1** |  |  |  | **0** | | **tan** | **0** |  | **1** |  | **----** | |  |
| 2. Sine Rule | Use with **non right angle triangles**.  Use when the question involves **2 sides and 2 angles**.  For missing side:  For missing angle:  There is an **ambiguous case** (where there are two potential answers)    To find the two angles, use **sine** to find one, and then **subtract your answer from 180** to find the other answer. |  |
| 3. Cosine Rule | Use with **non right angle triangles**.  Use when the question involves **3 sides and 1 angle**.  For missing side:  For missing angle: |  |
| 4. Graphs of Trigonometric Functions |  |  |
| 5. Area of a Triangle | Use when given the **length of two sides and the included angle**. | trig area example |

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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Pythagoras’ Theorem** |
| 1. Pythagoras’ Theorem | For any **right angled triangle**:    Used to find **missing lengths**.  a and b are the shorter sides, c is the **hypotenuse** (**longest side**). |  |
| 2. 3D Pythagoras’ Theorem | Find missing lengths by **identifying right angled triangles**.  You will often have to find a missing length you are not asked for before finding the missing length you are asked for. | Can a pencil that is 20cm long fit in a pencil tin with dimensions 12cm, 13cm and 9cm? The pencil tin is in the shape of a cuboid.  Hypotenuse of the base =  Diagonal of cuboid =  No, the pencil cannot fit. |

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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Accuracy** |
| 1. Place Value | The **value** of where a **digit** is within a number. | In 726, the value of the 2 is 20, as it is in the ‘tens’ column. |
| 2. Place Value Columns | The names of the columns that **determine the value of each digit**.  The ‘ones’ column is also known as the ‘units’ column. | Image result for place value columns |
| 3. Rounding | To make a number simpler but keep its value close to what it was.  If the **digit to the right** of the rounding digit is **less than 5, round down**.  If the **digit to the right** of the rounding digit is **5 or more, round up**. | 74 rounded to the nearest ten is 70, because 74 is closer to 70 than 80.  152,879 rounded to the nearest thousand is 153,000. |
| 4. Decimal Place | The **position** of a digit to the **right of a decimal point**. | In the number 0.372, the 7 is in the second decimal place.  0.372 rounded to two decimal places is 0.37, because the 2 tells us to round down.  Careful with money - don’t write £27.4, instead write £27.40 |
| 5. Significant Figure | The significant figures of a number are the digits which **carry meaning** (ie. are significant) to the size of the number.  The **first significant figure** of a number **cannot be zero**.  In a number with a decimal, trailing zeros are not significant. | In the number 0.00821, the first significant figure is the 8.  In the number 2.740, the 0 is not a significant figure.  0.00821 rounded to 2 significant figures is 0.0082.  19357 rounded to 3 significant figures is 19400. We need to include the two zeros at the end to keep the digits in the same place value columns. |
| 6. Truncation | A method of approximating a decimal number by **dropping all decimal places** past a certain point **without rounding**. | 3.14159265… can be truncated to 3.1415 (note that if it had been rounded, it would become 3.1416) |
| 7. Error Interval | A **range of values** that a number could have taken before being rounded or truncated.  An error interval is written using inequalities, with a **lower bound** and an **upper bound**.  Note that the lower bound inequality can be ‘equal to’, but the upper bound cannot be ‘equal to’. | 0.6 has been rounded to 1 decimal place.  The error interval is:  The lower bound is 0.55  The upper bound is 0.65 |
| 8. Estimate | To find something **close to the correct answer**. | An estimate for the height of a man is 1.8 metres. |
| 9. Approximation | When using approximations to estimate the solution to a calculation, **round each number in the calculation to 1 significant figure**.  means ‘approximately equal to’ | ‘Note that dividing by 0.5 is the same as multiplying by 2’ |

**Knowledge Organiser**