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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Perimeter and Area** |
| 1. Perimeter | The **total distance** around the **outside** of a shape.  Units include: etc. | Image result for perimeter |
| 2. Area | The amount of **space** **inside** a shape.  Units include: | Image result for area |
| 3. Area of a Rectangle | **Length x Width** |  |
| 4. Area of a Parallelogram | **Base x Perpendicular Height**  Not the slant height. | Image result for area of parallelogram |
| 5. Area of a Triangle | **Base x Height ÷ 2** | Image result for area of triangle |
| 6. Area of a Kite | Split in to **two triangles** and use the method above. | Image result for area of kite |
| 7. Area of a Trapezium | “Half the sum of the parallel side, times the height between them. That is how you calculate the area of a trapezium” | Image result for area of trapezium |
| 8. Compound Shape | A shape made up of a **combination of other known shapes** put together. |  |

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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Volume** |
| 1. Volume | Volume is a measure of the amount of space inside a solid shape.  Units: etc. | Image result for math definition volume |
| 2. Volume of a Cube/Cuboid | You can also use the Volume of a Prism formula for a cube/cuboid. | Image result for volume cuboid |
| 3. Prism | A prism is a 3D shape whose **cross section is the same** throughout. | Image result for math definition prism |
| 4. Cross Section | The **cross section** is the **shape** that **continues** all the way **through the prism**. |  |
| 5. Volume of a Prism |  |  |
| 6. Volume of a Cylinder |  |  |
| 7. Volume of a Cone |  |  |
| 8. Volume of a Pyramid | where B = area of the base |  |
| 9. Volume of a Sphere | Look out for hemispheres – just halve the volume of a sphere. | Find the volume of a sphere with diameter 10cm. |
| 10. Frustums | A frustum is a solid (usually a cone or pyramid) with the **top removed**.  Find the volume of the whole shape, then take away the volume of the small cone/pyramid removed at the top. | **Topic: Geometry and Measures (H)** |

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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Circumference and Area** |
| 1. Circle | A circle is the locus of all points equidistant from a central point. | Image result for math definition circle |
| 2. Parts of a Circle | **Radius** – the **distance** from the **centre** of a circle to the **edge**  **Diameter** – the total **distance** across the **width** of a circle **through the centre**.  **Circumference** – the **total distance** around the **outside** of a circle  **Chord** – a **straight line** whose **end points lie on a circle**  **Tangent** – a **straight line** which **touches** a circle at exactly **one point**  **Arc** – a **part of the circumference** of a circle  **Sector** – the **region** of a circle enclosed by **two radii** and their intercepted **arc**  **Segment** – the **region** bounded by a **chord** and the **arc** created by the chord | Image result for parts of a circle |
| 3. Area of a Circle | which means ‘pi x radius squared’. | If the radius was 5cm, then: |
| 4. Circumference of a Circle | which means ‘pi x diameter’ | If the radius was 5cm, then: |
| 5. (‘pi’) | Pi is the circumference of a circle divided by the diameter. |  |
| 6. Arc Length of a Sector | The arc length is part of the circumference.  Take the **angle** given **as a fraction over 360°** and **multiply** by the **circumference**. | Arc Length = |
| 7. Area of a Sector | The area of a sector is part of the total area.  Take the **angle** given **as a fraction over 360°** and **multiply** by the **area**. | Area = |
| 8. Surface Area of a Cylinder | **Curved Surface Area =**  or  **Total SA =** or |  |
| 9. Surface Area of a Cone | **Curved Surface Area =**  where  **Total SA =**  You may need to use Pythagoras’ Theorem to find the slant height |  |
| 10. Surface Area of a Sphere | Look out for hemispheres – halve the SA of a sphere and add on a circle | Find the surface area of a sphere with radius 3cm. |

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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’ |
| 10. Rational Number | A number of the form **,** where  **and are integers** and  A number that cannot be written in this form is called an ‘irrational’ number | are examples of rational numbers.  are examples of an irrational numbers. |
| 11. Surd | The **irrational number** that is a **root of a positive integer,** whose value cannot be determined exactly.  Surds have **infinite non-recurring decimals**. | is a surd because it is a root which cannot be determined exactly.  which never repeats. |
| 12. Rules of Surds |  |  |
| 13. Rationalise a Denominator | The process of rewriting a fraction so that the **denominator contains only rational numbers**. |  |

**Knowledge Organiser**