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| **Topic/Skill**  | **Definition/Tips** | **Example****Topic: Shape Transformations**  |
| 1. Translation | **Translate** means to **move a shape**. The shape does not change **size** or **orientation**. | Image result for translation maths |
| 2. Column Vector | In a column vector, the **top** number moves **left (-) or right (+)** and the **bottom** number moves **up (+) or down (-)** | $\left(\begin{matrix}2\\3\end{matrix}\right)$ means ‘2 right, 3 up’$\left(\begin{matrix}-1\\-5\end{matrix}\right)$ means ‘1 left, 5 down’ |
| 3. Rotation | The size does not change, but the **shape is turned around a point**.Use tracing paper. | Rotate Shape A 90° anti-clockwise about (0,1)Image result for rotation maths |
| 4. Reflection | The size does not change, but the shape is ‘**flipped’** like in a **mirror**.Line $x=?$ is a **vertical line**.Line $y=?$ is a **horizontal line**.Line $y=x$ is a **diagonal line**. | Reflect shape C in the line $y=x$Image result for reflection maths |
| 5. Enlargement | The shape will get **bigger or smaller**. Multiply each side by the **scale factor**. | Scale Factor = 3 means ‘3 times larger = multiply by 3’Scale Factor = ½ means ‘half the size = divide by 2’ |
| 6. Finding the Centre of Enlargement | Draw **straight** **lines** through **corresponding corners** of the two shapes.The centre of enlargement is the point **where all the lines cross over**.Be careful with negative enlargements as the corresponding corners will be the other way around. |  |
| 7. Describing Transformations | Give the following information when describing each transformation:Look at the number of marks in the question for a hint of how many pieces of information are needed.If you are asked to describe a ‘transformation’, you need to say the **name of the type of transformation** as well as the other details. | **- Translation, Vector****- Rotation, Direction, Angle, Centre****- Reflection, Equation of mirror line****- Enlargement, Scale factor, Centre of enlargement** |
| 8. Negative Scale Factor Enlargements | Negative enlargements will **look like they have been rotated**.$SF=-2$ will be rotated, and also twice as big. | Enlarge ABC by scale factor -2, centre (1,1)Image result for negative scale factor enlargement |
| 9. Invariance | A point, line or shape is invariant if it **does not change/move** when a transformation is performed.An invariant point ‘does not vary’. | If shape P is reflected in the $y-axis$, then exactly one vertex is invariant.Image result for invariance transformation |

**Knowledge Organiser**