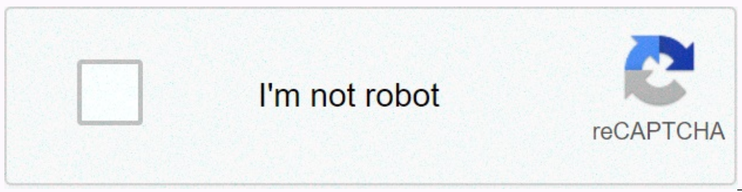

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Transformation translation worksheet pdf

Translation is the process of moving a shape. Translations are often described using vectors,\begin{pmatrix}\textcolor{red}{x}\\\textcolor{blue}{y}\end{pmatrix}, where the top value represents the movement in x (positive means right, negative means left) and the lower value represents the movement in y (means positive up, negative means down). For example, the vector \begin{pmatrix}\textcolor{red}{-3}\\\textcolor{blue}{2}\end{pmatrix} means moving \textcolor{red}{3} spaces to the left and \textcolor{blue}{2} spaces up. Let's see an example. Example: Translate shape A from the vector \begin{pmatrix}\textcolor{red}{-4}\\\textcolor{blue}{1}\end{pmatrix}. The vector in the question has a \textcolor{red}{-4} at the top and a \textcolor{blue}{1} at the bottom, which means we have to translate this \textcolor{red}{4} spaces to the left and \textcolor{blue}{1} up. One way to do this is to move the corners one by one. If you move each corner 4 spaces to the left and 1 space up, all that remains is to merge the new set of corners and get the translated shape. The resulting shape appears on the left. The next type of transformation is rotation. To rotate a shape or describe a rotation, these three details are required: the center of rotation (coordinates, or source) The direction in which you are rotating (clockwise/counterclockwise) the angle of rotation (90\degree, 180\degree, or 270\degree) Example: Rotate Shape A counterclockwise \textcolor{blue}{90\degree} on \textcolor{orange}{(1, 1)}. You can use gloss paper when answering these questions and it is useful to do so. First mark the \textcolor{orange}{(1, 1)} rotation center marked with a dot on the axes (red). The direction you're rotating counterclockwise means we're going to rotate in the opposite direction to the hands of a watch. Finally, the rotation angle, \textcolor{blue}{90\degree} is a quarter turn. To perform this task on gloss paper, draw shape A and place the pencil on the point of rotation. Then, hold the pencil fixed, rotate the paper by a quarter counterclockwise. The point at which the drawn shape ends is the result of rotation. The resulting shape is shown below (orange). You might feel comfortable without tracking the paper, which is great, but if you're not, don't worry: you can always ask in an exam. To reflect a shape, only a mirror line is required (for example, x=3 or the y-axis). Example: Reflect shape A in line y=0. First, recognize that line y=0 is the x-axis and mark it on the axes (red). This transformation can be done with gloss paper or simply by ensuring that all corners of the shape are same distance from the mirror line. Shape A has been reflected in the x-axis to give the green form shown. The next type of transformation is enlargement. To enlarge a shape or describe an enlargement you need these two Scale factor (\text{Scale Factor} = \dfrac{\text{New Length}}{\text{Old Length}}) The center of magnification (coordinates) Example: Enlarge the ABCD form below by scale factor \textcolor{orange}{2} on the source. The center of magnification is the \textcolor{blue}{(0,0)} Scale factor is \textcolor{orange}{2} 1. First draw lines from \textcolor{blue}{(0,0)} to all corners of the shape. Since the scale factor is \textcolor{orange}{2}, we want to extend all these lines to 2 times longer (scale factor 3 would mean 3 times longer and so on). 2. The lines are now drawn from the corners of the new shape, which is 2\ times larger than the original. AD = 2 \text{ Squares} on the original, then AD = 4\text{ Squares} on the enlarged shape. 3. Finally, join the corners of the new shape. Since these forms are mathematically similar, they should have the same form. Note: The scale factor tells you how big the shape will be, the center of enlargement tells you where it will be. The key things to remember when it comes to scale factors are: if the scale factor is greater than 1, the shape will become larger and will be on the same side of the center of enlargement If the scale factor is smaller than 1, the shape will become smaller and be on the same side of the center of enlargement If the scale factor is negative , the new shape will be on the opposite side of the center of enlargement, i.e. a rotation of 180 degrees Magnifying Form A by a scale factor of -2 using (0.0) as the center of enlargement. 1. Draw the lines first from the corners of the shape through (0.0) and extend them further. Since the scale factor is -2, we know that the shape will be on the opposite side of the centre of enlargement. 2. Multiply the distance between the corner of

the shape and the center of the magnification by 2 (since the scale factor is -2) and measure this distance on the other side, finding the angle of the new shape. Repeat for all corners of the shape This can be seen with red arrows on the diagram. 3. Finally, join the corners of the new shape. First, we have to draw the line y=1 on the graph. Then, you can choose to use gloss paper or, if you are sure without it, go straight into the reflection. If you use gloss paper, you must first draw the shape and mirror line. Then flip the gloss paper and perfectly align the mirror line on the page with the one on the gloss paper so that the shape track is on the opposite side of the line to the original shape. So, the shape trace is the result of the reflection. Draw that shape on the original axes, report with a C, and you should get the resulting image below. First, the two shapes have the same appearance and orientation, so it would not make much sense for them to have been rotated or reflected. In fact, And it's just result of moving D up and to the right. We have to pick a corner and see how far he's moved. Looking at the lower right corners of each shape, we can see that 6 spaces have been moved to the right and 3 spaces up, so the complete description of the transformation is: Translation from the vector \begin{pmatrix}6\\3\end{pmatrix} We have to draw lines from the point (0, 1) to all corners of this shape. Then, since this is an enlargement of the scale factor 3, we must extend these lines until they are 3 times longer. For example, line (0, 1) to A goes 1 space to the right and 1 up. Then, once extended, the resulting line should go 3 spaces to the right and 3 spaces up. So once you draw all these lines, their ends will be the corners of the enlarged shape. By joining these angles, we get the completed shape, as seen below. First, mark the rotation point on the axes (here, it's a red dot). Then rotate the shape of 180\degree. If using gloss paper, draw the shape on the gloss paper and place the pencil on the point of rotation. Then, rotate the paper mid-turn and the point where the drawn shape moved is the result of rotation. The result of this first transformation is shown below. Now, we have to apply the second transformation to the result of the first (here, the dashed gray form). Then, we will start by drawing on the mirror line y=x (orange). Then, if you use gloss paper, draw both the mirror line and the shape on the gloss paper. Next, flip the gloss paper and perfectly align the mirror line on the gloss paper with the one on the paper. The position of the drawn shape is the result of the reflection. You can verify that it is correct to see if the angles of each shape are the same distance from the reflection line. If you're sure, mark the G-shape. The result is shown below. b) None of the points on F remain at the same point after being transformed into G, so the number of invariant points is zero. How to zoom in with a negative scale factor is a little less intuitive, but it's not much more difficult. Let's start again by drawing lines from the center of enlargement – here, the origin – at every corner of the shape. Now, instead of extending the lines outwards from the corner, we extend the lines beyond the center of enlargement. Since the scale factor is -1, the extension part of the lines (the part that goes outwards from the origin, away from the shape) will have the same length as the original lines drawn from the corners to the ABC. If the scale factor was -2, the extension part of the lines would be twice the length of the lines This is subtly different from positive scale factors, so make sure you understand it. For example, the line from origin to C goes 2 to the right and 1 up. So, the extension to this this will, from the origin, go 2 to the left, and 1 down. Carrying on this with all the dots, and then joining the ends of the lines (since they form the angles of our shape), we get If you have a sharp eye, you will notice that this is actually equivalent to rotating the shape around the center of the 180\ degree magnification. Here's a graphic preview for all transformation worksheets. You can select different variables to customize these transformation worksheets to your needs. Transformation worksheets are created randomly and will never repeat so that you have an endless supply of quality transformation worksheets for use in the classroom or at home. We have translation, rotation and reflection worksheets for your use. Our transformation worksheets are downloadable, easy to use and very flexible. These transformation worksheets are a great resource for fifth, 6th grade, 7th grade, and 8th graders. 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