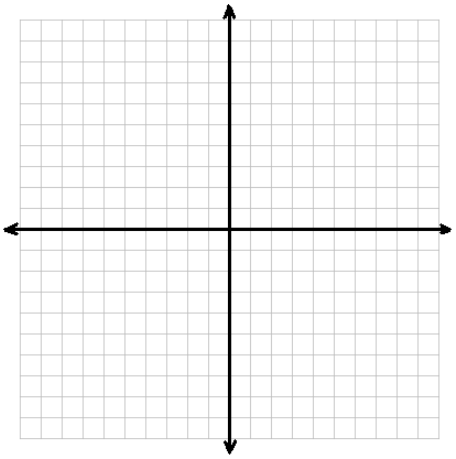
Geometry
Big Ideas Chapter 4 Challenge Problems

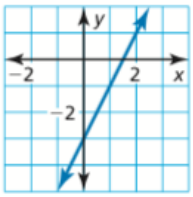
Name _____
Date _____ Period _____

1) The vector $PQ = \langle 4, 1 \rangle$ describes the translation of $A(-1, w)$ onto $A'(2x + 1, 4)$ and $B(8y - 1, 1)$ onto $B'(3, 3z)$. Find the values of w, x, y, and z.



2) The line $y = 3x + 2$ is reflected in the line $y = -1$. What is the equation of the image?

3) Use the graph of y = 2x − 3. Rotate the line 90°, 180°, 270°, and 360° about the origin. Write the equation of the line for each image. − Describe the relationship between the equation of the preimage and the equation of each image.



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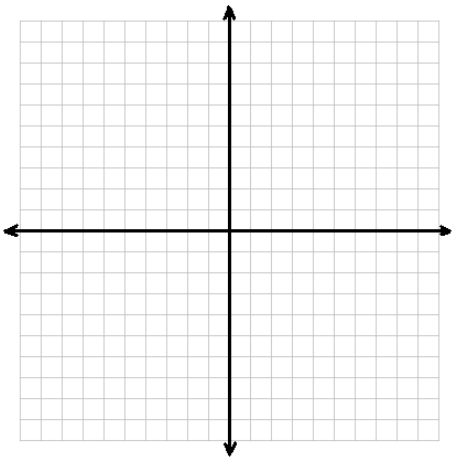

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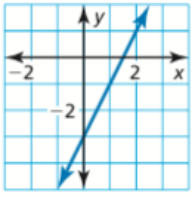
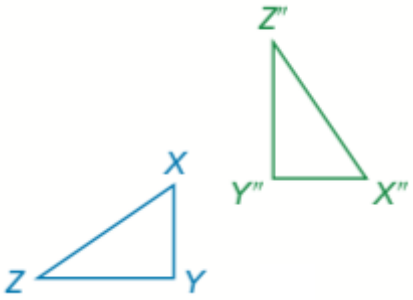
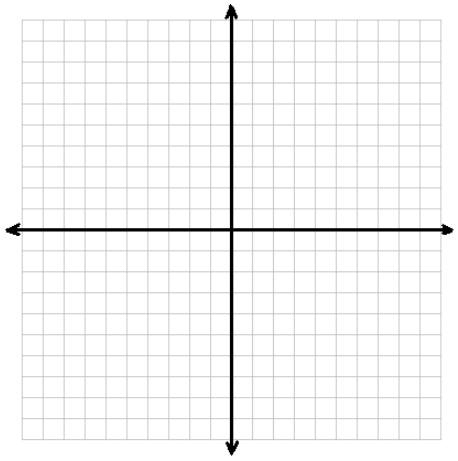


4) ΔXYZ is the pre-image and ΔX′′Y′′Z′′ is the image of a rotation. Use a compass and straight edge to find the center of rotation.



5) Your friend prints a 4-inch by 6-inch photo for you from the school dance. All you have is an 8-inch by 10-inch frame. Can you dilate the photo to fit the frame? Explain your reasoning.



6) Quadrilateral JKLM is mapped to quadrilateral J′K′L′M′ using the dilation (x, y) → $\left(\frac{3}{2}x, \frac{3}{2}y\right)$. Then quadrilateral J′K′L′M′ is mapped to quadrilateral J′′K′′L′′M′′ using the translation (x, y) → (x + 3, y − 4). The vertices of quadrilateral J′K′L′M′ are J′(−12, 0), K′(−12, 18), L′(−6, 18), and M′(−6, 0). Find the coordinates of the vertices of quadrilateral JKLM and quadrilateral J′′K′′L′′M′′. Are quadrilateral JKLM and quadrilateral J′′K′′L′′M′′ similar? Explain.

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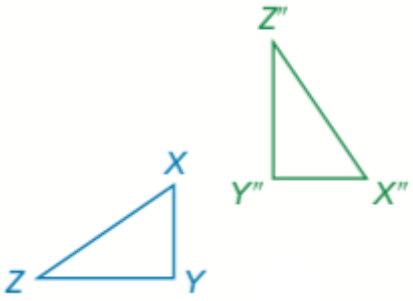

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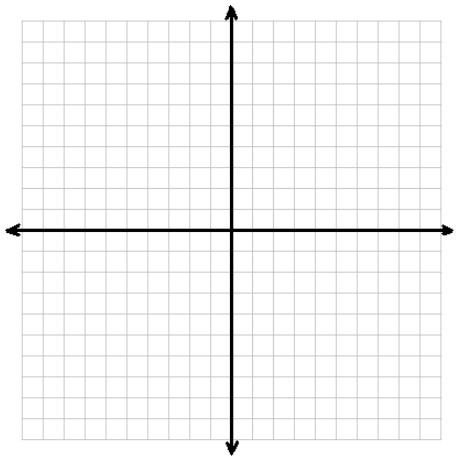

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