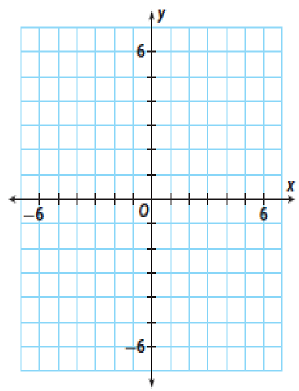
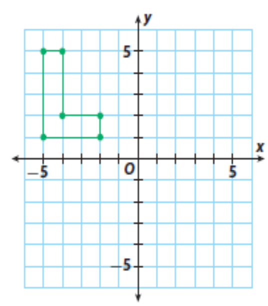
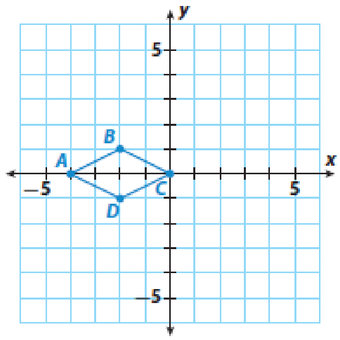
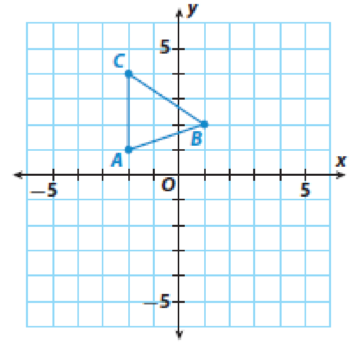
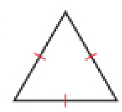
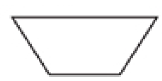
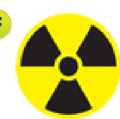
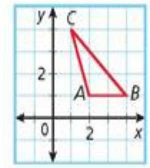
Name: ________________________________ # __________

Geometry: Period ____________
Ms. Pierre
Date: _____________

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

Key Standards	Study Tips	Practice Questions
Identifying three types of Transformations	Translation and Rotation keeps the orientation (direction) of the figure the same **Pre-image** is the original figure, **Image** is the resulting figure	**Match the term on the left to the correct expression on the right.** **1.** transformation — **A.** A function that describes a change in the position, size, or shape of a figure. **2.** reflection — **B.** A function that slides a figure along a straight line. **3.** translation — **C.** A transformation that flips a figure across a line.
Translations	A figure "**slides**" horizontally, vertically, or both. A **positive** integer describes a translation **right or up** on a coordinate plane. A **negative** integer describes a translation **left or down** on a coordinate plane.	**4.** **A** Multistep Graph triangle *XYZ* with vertices *X*(−2, −5), *Y*(2, −2), and *Z*(4, −4) on the coordinate grid. **B** On the same coordinate grid, graph and label triangle *X′Y′Z′*, the image of triangle *XYZ* after a translation of 3 units to the left and 6 units up. **C** Now graph and label triangle *X″Y″Z″*, the image of triangle *X′Y′Z′* after a translation of 1 unit to the left and 2 units down. **D** Analyze Relationships How would you describe the translation that maps triangle *XYZ* onto triangle *X″Y″Z″*? ______________________________ 
Reflections	A figure is **"flipped"** over a line of symmetry. A reflection produces a mirror image of a figure. **Reflect a figure over the x-axis**- when reflecting over the x-axis, change the y-coordinates to their opposites. **(x, -y)** **Reflect a figure over the y-axis**- when reflecting over the y-axis, change the x-coordinates to their opposites. **(-x, y)**	**5.** **A** Graph the image of the figure shown after a reflection across the *y*-axis. **B** On the same coordinate grid, graph the image of the figure you drew in part a after a reflection across the *x*-axis. **C** Make a Conjecture What other sequence of transformations would produce the same final image from the original preimage? Check your answer by performing the transformations. Then make a conjecture that generalizes your findings. ______________________________ ______________________________ ______________________________ ______________________________ 

Rotations	A figure **"turns"** about a fixed point at a given angle and a given direction. **90 degree** counterclockwise rotation around the origin (0,0), use:**(-y, x)** **180 degree** rotation around the origin (0,0), use: **(-x, -y)** **270 degree** counterclockwise rotation around the origin (0,0), use:**(y, -x)**	**Draw the image of the figure after the given rotation about the origin.** **6.** 180°  **7.** 270° counterclockwise 
Line Symmetry	A figure has **symmetry** if there is a transformation of the figure such that the image coincides with the pre-image A figure has **line symmetry** if it can be reflected across a line so that the image coincides with the pre-image.	**8.** Explain whether each figure has line symmetry. A  B  C  D  E  F 
Rotational Symmetry	A figure has **rotational symmetry** if it can be rotated about a point by an angle greater than 0° and less than 360° so that the image coincides with the pre-image.	**9.** Explain whether each figure has rotational symmetry. If so, give the angle of rotational symmetry and the order of the symmetry. A  B  C  D  E  F 

Sequences of Transformations	When two or more transformations are combined to form a new transformation the result is called a **sequence of transformations** In a **composition**, one transformation produces an image upon which the other transformation is then performed.	**10.** **A** $\triangle ABC$ is reflected across the y-axis. Then its image is rotated 90° about the origin. What are the coordinates of the final image of point A under this composition of transformations? Ⓐ $(-1, -2)$ Ⓑ $(-2, 1)$ Ⓒ $(1, 2)$ Ⓓ $(-2, -1)$  **B** Which composition of transformations maps $\triangle ABC$ into the fourth quadrant? Ⓕ Reflect across the x-axis and then reflect across the y-axis. Ⓖ Rotate about the origin by 180° and then reflect across the y-axis. Ⓗ Translate along the vector $\langle -5, 0\rangle$ and then rotate about the origin by 90°. Ⓙ Rotate about the origin by 90° and then translate along the vector $\langle 1, -2\rangle$. **C** Which is equivalent to the composition of two translations? Ⓐ Reflection Ⓑ Rotation Ⓒ Translation Ⓓ Glide reflection