Name _____ Period _____ Date _____

Intermediate II
Chapter 6 Review

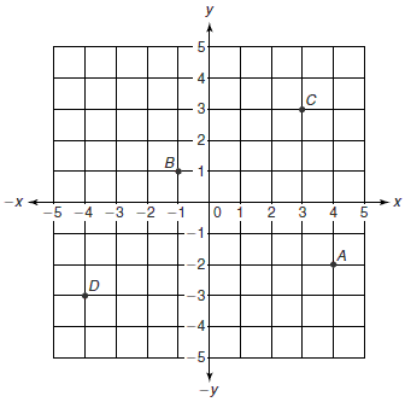
6.1 (Translations)

Remember: Translations are just SLIDING the image around the coordinate plane
Pre-image: original image (A, B, C)
Image: new image AFTER transformation of any kind (A', B', C')
IF you're moving LEFT OR RIGHT, this affects your X-COORDINATE.
IF you're moving UP OR DOWN, this affects your Y-COORDINATE.
TRANSLATION NOTATION: (change in all x-coordinates, change in all y-coordinates)
Example: Shift the pre-image left 3 and up 4: (x – 3, y + 4)

Sample Problems:
Write the following transformations in translation notation.

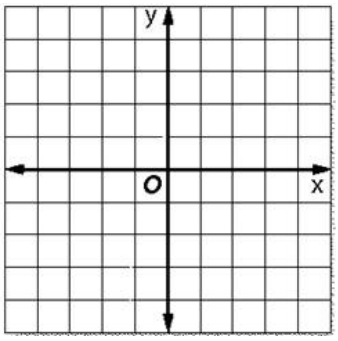
1. Shift 3 down and 4 to the right.
2. Shift 2 up and 6 to the left
3. Shift 4 down and 5 to the right.

4. $A(3,-4) \rightarrow A'(5,0)$
5. $B(-4,-2) \rightarrow B'(-6,2)$



6. Translation notation from point D to point A:
7. Translation notation from point A to point B:
8. Translation notation from point C to point A:

9. Graph triangle A(-4, 0), B(-4, 3), and C(-1, 0) and its image after a translation of (x+2,y-4).



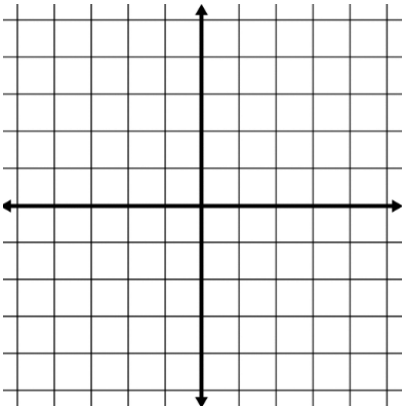
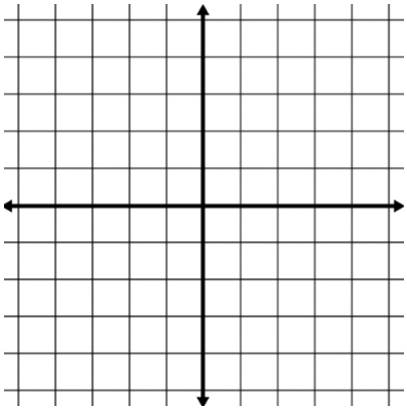
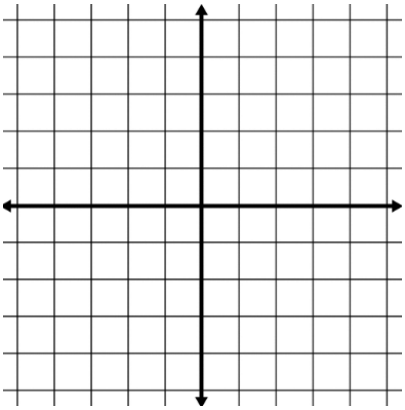
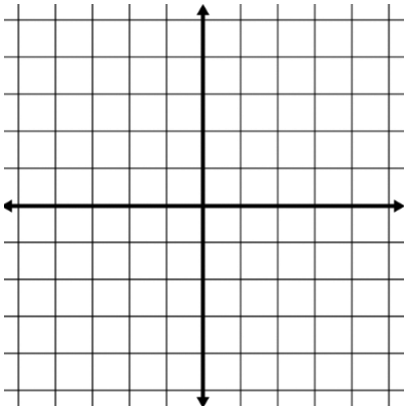
10. Give the vertices of W(-1, -3), X(-1, 2), Y(2, -3), Z(2, 2) after a translation of 5 units up and 3 units to the right.

6.2 Reflections

REFLECTION: a mirror image that is CONGRUENT to the pre-image
Two lines of symmetry (this year ☺):

Reflection over the X-AXIS: x-coordinate stays the same; y-coordinate changes signs (same, –)
Reflection over the Y-AXIS: x-coordinate changes signs; y-coordinate stays the same (– , same)

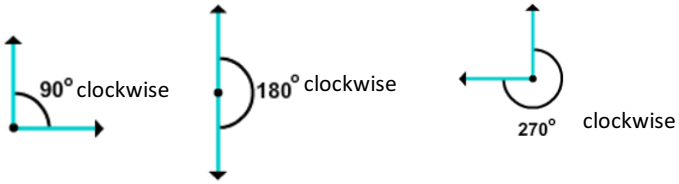
Sample Problems:

<table>
<tr><td colspan="4">1. Graph the following triangle on both coordinate planes below.
Triangle ABC has coordinates $A(2,3)\ B(3,1)\ and\ C(4,3)$.</td></tr>
<tr><td>Graph triangle ABC's reflection over the x-axis. Write the new coordinates.
  </td><td>New coordinates:</td><td>Graph triangle ABC's reflection over the y-axis. Write the new coordinates.
  </td><td>New coordinates:</td></tr>
<tr><td colspan="4">2. Graph the following triangle on both coordinate planes below.
Triangle DEF has coordinates $A(-2,-3)\ B(-3,0) and\ C(2,5)$.</td></tr>
<tr><td>Graph triangle DEF's reflection over the x-axis. Write the new coordinates.
  </td><td>New coordinates:</td><td>Graph triangle DEF's reflection over the y-axis. Write the new coordinates.
  </td><td>New coordinates:</td></tr>
</table>

6.3 Rotations

Rotations are clockwise (to the  right) or counter-clockwise  (to the left)

Degrees we use (this year ☺) are $90°,\ 180°, and\ 270°$



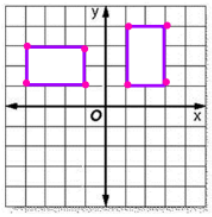
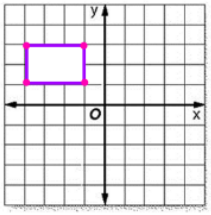
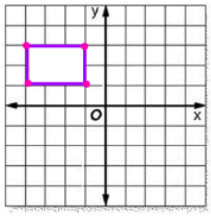
*$90°\ clockwise\ is$_____ $counterclockwise,$
$180°\ clockwise\ is$ _____$counterclockwise, 270°\ clockwise\ is$ _____$counterclockwise$

There are two kinds of rotations:

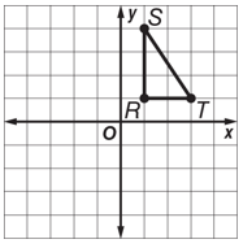
* Rotation about the origin
* Rotation about a fixed point (not the origin)

Rotations about the ORIGIN

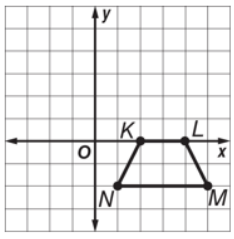
90°	180°	270°
Clock-wise:	Clock-wise:	Clock-wise:
(x, y) → (,)	(x, y) → (,)	(x, y) → (,)
Counter Clock-wise:	Counter Clock-wise:	Counter Clock-wise:
(x, y) → (,)	(x, y) → (,)	(x, y) → (,)

Triangle RST has vertices $R(1, 1)$, $S(1, 4)$, and $T(3, 1)$. Graph the figure and its rotated image after a clockwise rotation of 180° about the origin. Then give the coordinates of the vertices for triangle $R'S'T'$.

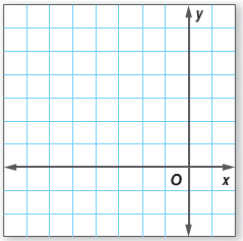


Quadrilateral $KLMN$ has vertices $K(2, 0)$, $L(4, 0)$, $M(5, -2)$, and $N(1, -2)$. Graph the figure and its rotated image after a counterclockwise rotation of 90° about the origin. Then give the coordinates of the vertices for quadrilateral $K'L'M'N'$.

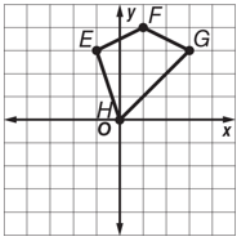


Rotations about a Fixed Point

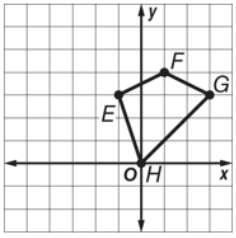
Rectangle $ABCD$ with vertices $A(-7, 4)$, $B(-7, 1)$, $C(-2, 1)$, and $D(-2, 4)$ represents the bed in Jackson's room. Graph the figure and its image after a clockwise rotation of 90° about vertex C. Then give the coordinates of the vertices for rectangle $A'B'C'D'$.



90° clockwise about vertex H



180° counterclockwise about vertex E



6.4 Dilations

Multiply each x value and each y value by the scale factor (k)

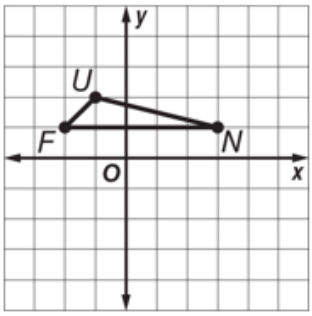
$k > 1$, then the dilation is an enlargement (get's bigger)

$k < 1$, then the dilation is a reduction (get's smaller)

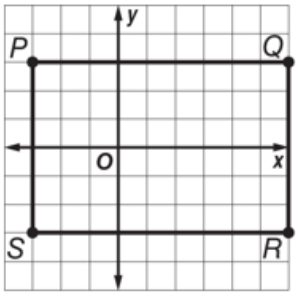
$k = 1$, then the figure stays the same size

Sample Problems:

$F(-2, 1), U(-1, 2), N(3, 1); k = 2$



$P(-3, 3), Q(6, 3), R(6, -3), S(-3, -3); k = \frac{1}{3}$



David built a model of a regulation basketball court. His model measured approximately 3.75 feet long by 2 feet wide. The dimensions of a regulation court are 94 feet long by 50 feet wide. What is the scale factor David used to build his model?

Review of Solving Equations

$-3x - 4 = 4x + 10$

$2(m + 3) - 5 = 5 + 2m$

$5(z + 1) + 14 = 19 - 2z + 7z$