14-3 Translations

Date April

***Definition*:** A translation is a slide or glide.

It is described by a rule $(x,y) \rightarrow (x+a, y+b)$

where a & b are constants

A translation is a congruence transformation or isometry, because lengths are preserved

***Ex. 1*:** If $T:(4,5)\rightarrow(2,8)$, then

a) $(-2,3)\rightarrow(-4, 6)$ (−2−2, 3+3)

b) $(x,y)\rightarrow(x-2, y+3)$ $\quad x-2=-3 \quad y+3=2$

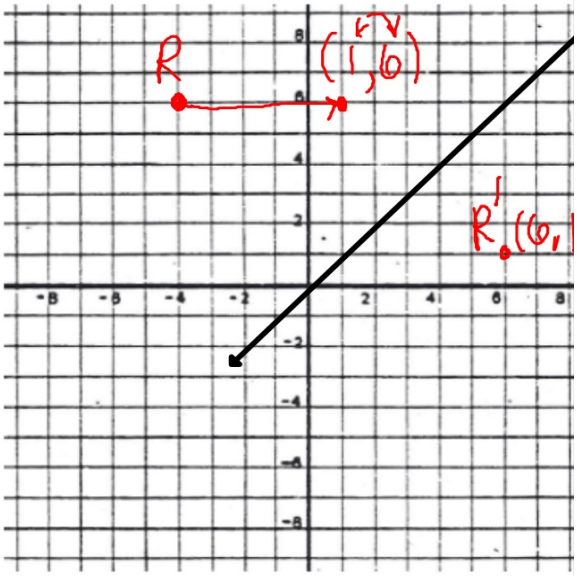
c) $(-1, -1)\rightarrow(-3,2)$ (−3, +2)

Ex. 2: Given: point $M(3, 1)$. Find M' under the translation $T:(x, y)\rightarrow(x+5, y-4)$.

$M'(8,-3)$

Ex. 3: Given: point $R(-4, 6)$. Find R' under a glide 5 units to the right followed by a reflection in the line $y = x$.

$R'(6,1)$



14-4 Rotations

Date April 17

***Definition*:** A rotation is a turn about a fixed point called the center

A rotation in the clockwise direction is represented with a negative number of degrees.

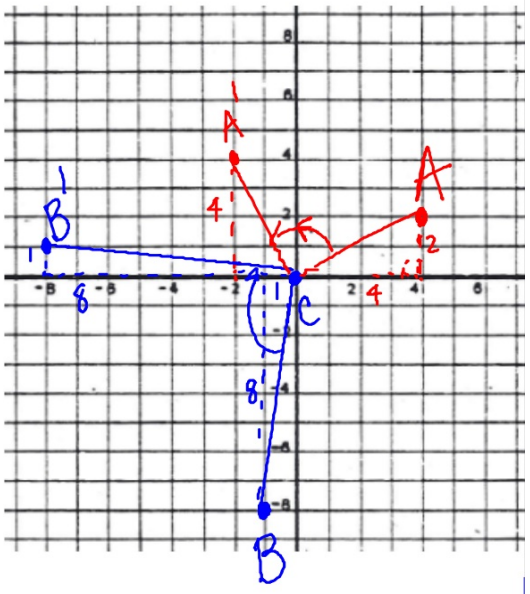
A rotation in the counterclockwise direction is represented with a positive number of degrees.

A halfturn is a rotation of 180° or -180°.

A rotation is a congruence transformation or isometry because lengths are preserved.

***Ex. 1*:** rotate $A(4, 2)$ 90° about the origin

***Ex. 2*:** rotate $B(-1, -8)$ -90° about the origin



Ex. 3: rotate $C(-2, 3)$ 90° about the point $(4, 1)$ $C'(2, -5)$

CCW = center

Ex. 4: rotate $D(5, 4)$ a half-turn about the point $(-1, 0)$

180° = center

$D'(-7, -4)$