Unit 1 Review: Transformations

1. Translation: sliding/shifting the figure horizontally/vertically

Rule: (x + or - #, y + or - #)

-When a number is added or subtracted to the **x**, the slide/shift is **right (+) or left (-)**.

-When a number is added or subtracted from the **y**, the slide/shift is **up (+) or down (-)**.

2. Reflection: figure is folding over the x axis, y axis, y=x, y=-x, y= #, or x=#

Rules:

* X axis: (x, y)—(x, -y) \*\***x** stays the **same**, **y** changes **sign**
* Y axis: (x, y)—(-x, y) \*\***y** stays the **same**, **x** changes **sign**
* Y=X: **diagonal line with positive (+) slope** (x, y)—(y, x) \*\*change order
* Y=-X **diagonal line with negative (-) slope** (x, y)—(-y, -x) \*\*change order AND sign
* Y=# **horizontal line** at number on y axis
* X=# **vertical line** at number on x axis

\*\*\*DRAW THEM OUT IF YOU CAN’T REMEMBER EACH ONE\*\*\*

3. Rotation around origin (0, 0)

* 90° CW and 270° CCW—**DRIVE BUS** 90° CW: (x, y)—(y, -x)
* 90°CCW and 270°CW—**DRIVE BUS** 90° CCW: (x, y)—(-y, x)
* 180° change signs (x, y)—(-x, -y)
* 360° Nothing changes (x, y)—(x, y)

4. Rotation around a specific point

Follow 3 steps:

Step 1: Subtract new center from coordinate

Step 2: Apply transformation (follow rules above—depending on rotation)

Step 3: Add new center to coordinate

5. Dilation: enlarging or reducing the figure

\*\*if k>1, image will *enlarge* \*\* if 0<k<1, image will *reduce/shrink*

* **Dilation**: multiply each coordinate by the given scale factor (k)-- (x, y)—(kx, ky)
* Stretch/shrink **horizontally**: multiply only the **x’s** by scale factor (k)-- (x, y)—(kx, y)
* Stretch/shrink **vertically**: multiply only the **y’s** by scale factor (k)-- (x, y)—(x, ky)
* **Dilation** About a specific point: Step 1: Subtract new center from coordinates

Step 2: Multiply coordinates by scale factor provided

Step 3: Add new center to coordinates

6. Sequence of transformations: multiple transformation are taking place; describe each of them one at a time

\*Identify dilation or rotations of the figure **1st** and identify translations **last**