Study Guide for Geometric Shapes/Transformations

1. *Polygons* can be regular or irregular

Polygons	- Two-dimensional - Closed shape - Straight sides
Regular Polygons	- All sides are the same length - All angles are the same
Irregular Polygons	- Not all sides are the same length and/or - Not all angles are the same

2. Shapes can be classified by their number of sides and vertices

   # of sides = # of vertices

Vertices are where two sides meet. The vertices of a shape are the corners.

Vertices
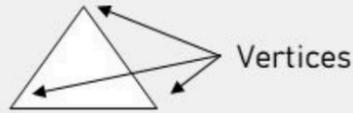
Name of Shape	Number of Sides
Hexagon	6
Pentagon	5
Triangle	3
Quadrilateral	4
Octagon	8

3. Angles can be named in shapes

Acute Smaller than right angle	**right angle** 90 degrees	**Obtuse** Larger than right angle
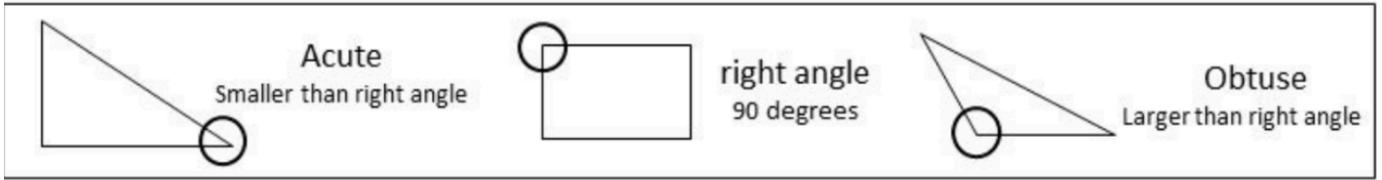
4. Triangles can be labeled as <u>acute</u>, <u>right</u>, or <u>obtuse</u>

Acute Triangle	Right Triangle	Obtuse Triangle
All Angles Are Less Than 90°	1 Angle Is 90°	1 Angle Is Greater Than 90°

5. Triangles can be labelled as <u>equilateral</u>, <u>isosceles</u>, or <u>scalene</u>

Equilateral Triangle	Isosceles Triangle	Scalene Triangle
3 Equal Sides 3 Equal Angles	2 Equal Sides 2 Equal Angles	No Equal Sides No Equal Angles

6. Prisms can be classified by their number of <u>faces</u>, <u>edges</u>, and <u>vertices</u>.

Faces	
Edges	
Vertices	
Name	

Faces	
Edges	
Vertices	
Name	

Faces	
Edges	
Vertices	
Name	

Faces	
Edges	
Vertices	
Name	

7. Lines can be parallel, intersecting, or perpendicular

= Parallel Lines   = Perpendicular Lines   = Intersecting Lines

8. There are several types of quadrilaterals

| Trapezium | Trapezoid | Parallelogram |

No sides are parallel   Two sides are parallel   Two pairs of parallel sides

| Kite | Rhombus | Rectangle | Square |

Two pairs of adjacent   Four sides are   Four right angles   All four sides
sides are of equal length   of equal length   are of equal length
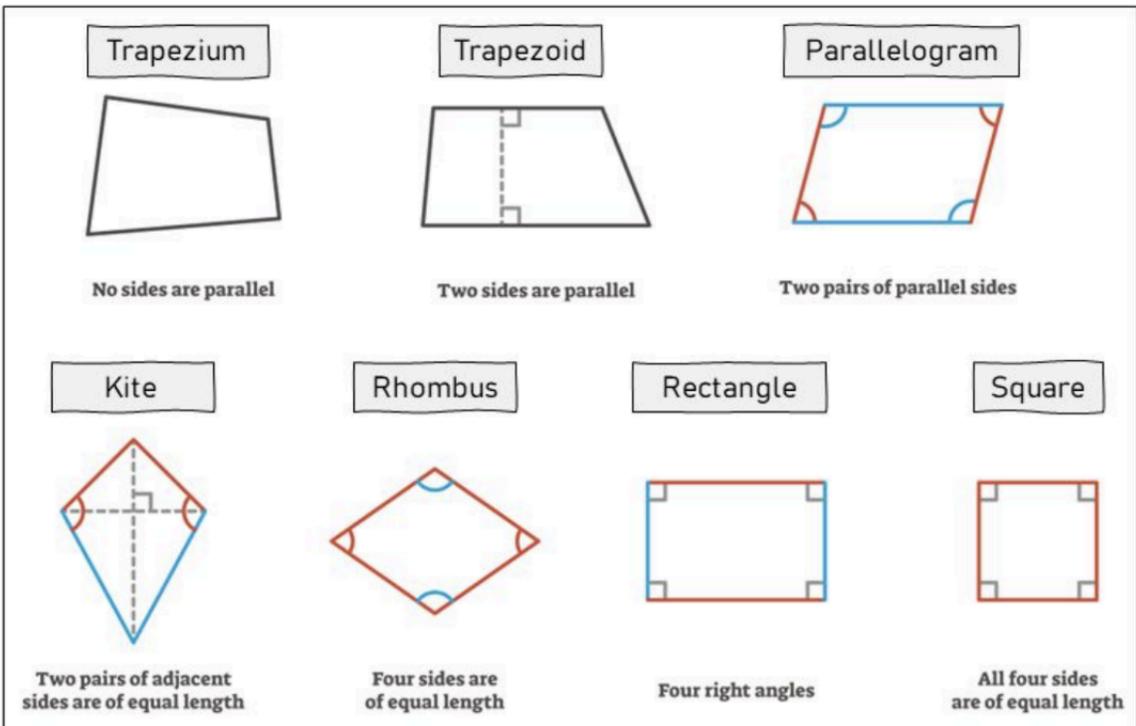
9. Determining complimentary angles

Complimentary Angles are two angles that add up to 90°. Therefore, the angles 40° and 50° are complementary angles because they add up to 90°. Together, complimentary angles add up to make a right angle.

Example:

50°
40°
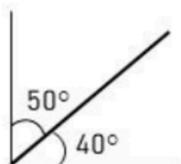
We can determine the missing complimentary angle by subtracting the known angle from 90.

?°
25°
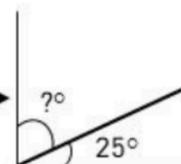
90 – 25 = ?
? = 65

10. Determining <u>supplementary</u> angles

Supplementary Angles are two angles that add up to 180°. You will notice that two supplementary angles make a straight angle of 180°.

<u>Example:</u>

140°   40°
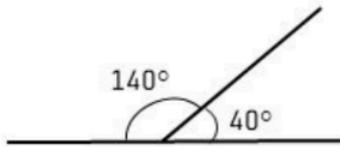
We can determine the missing supplementary angle by subtracting the known angle from 180.

C°   25°   180 – 25 = ?
C = 155
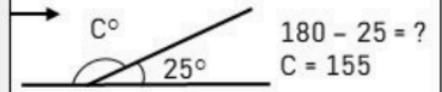
11. There are 3 types of transformations:
    a. <u>slide</u> - <u>Translate</u>
    b. <u>Flip</u> - <u>Reflect</u>
    c. <u>Turn</u> - <u>Rotate</u>

12. Describing <u>translations</u> using words.
    Shape A is the original object
    First Left/Right, **Then** Up/Down
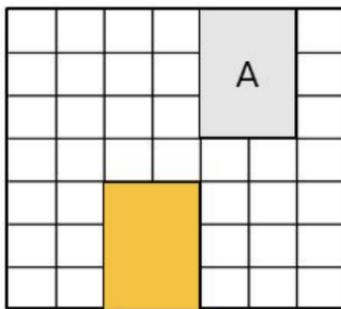
1) 2 left, 4 down
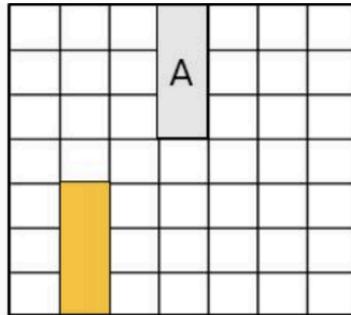
2) _____
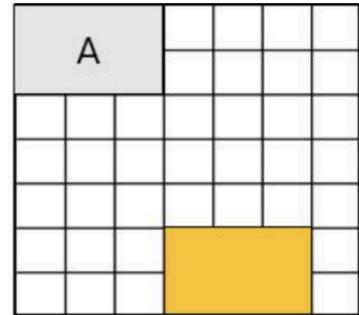
3) _____
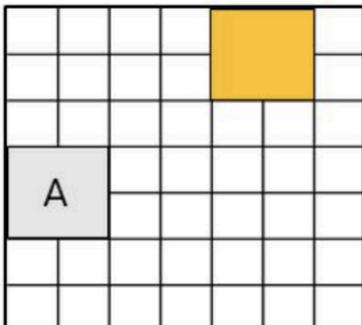
4) _____
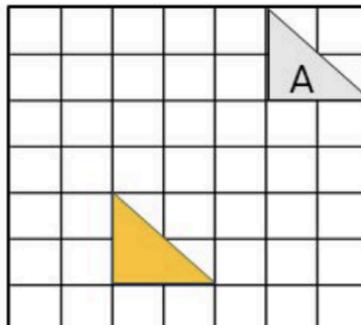
5) _____
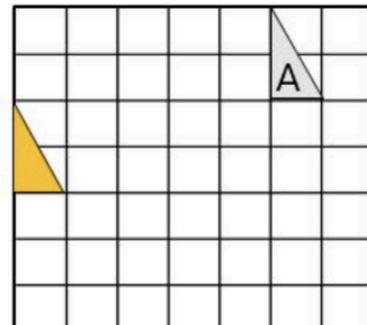
6) _____

13. Performing translations
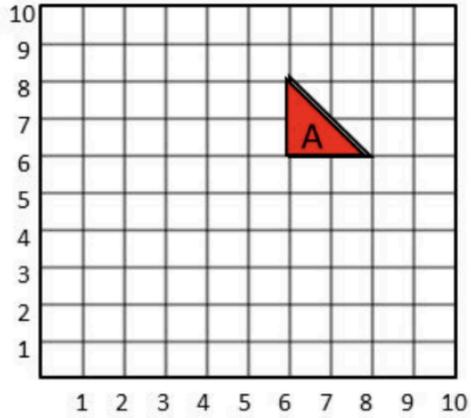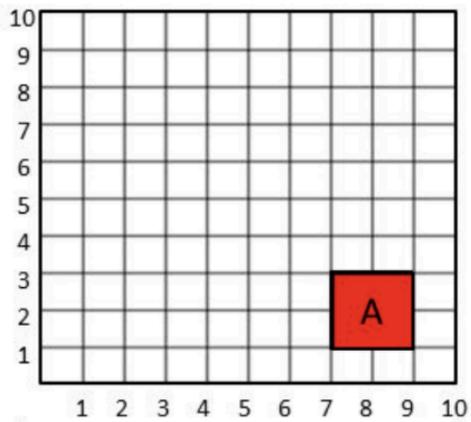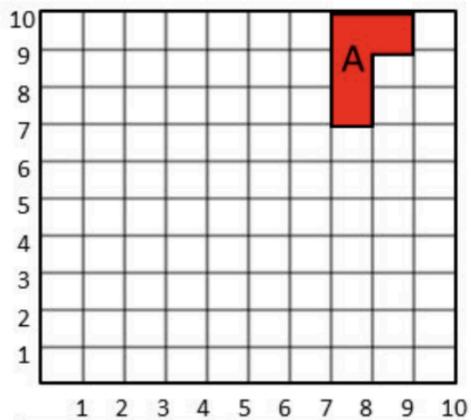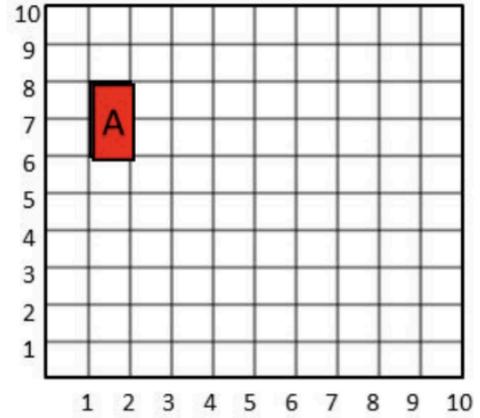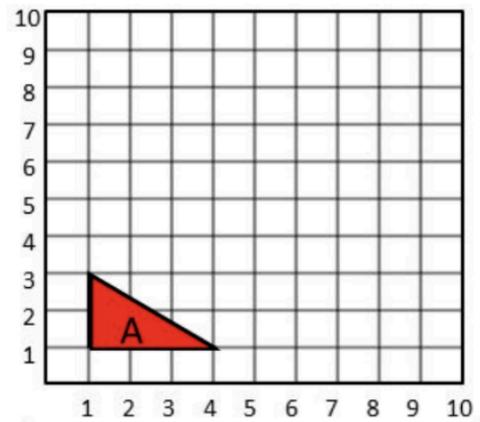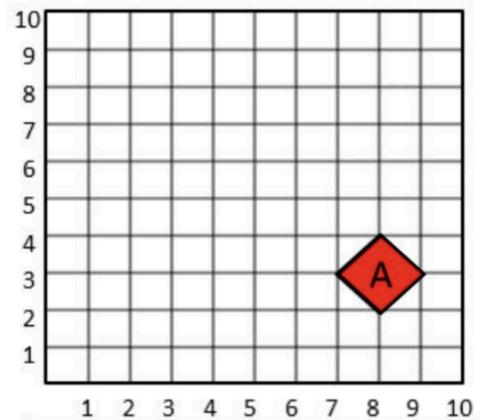
1) Left 4, down 3	2) Right 5, down 4
3) Left 6, up 2	4) Right 5, up 5
5) Left 3, down 6	6) Left 2, up 4

14. Reflecting shapes across the line of symmetry
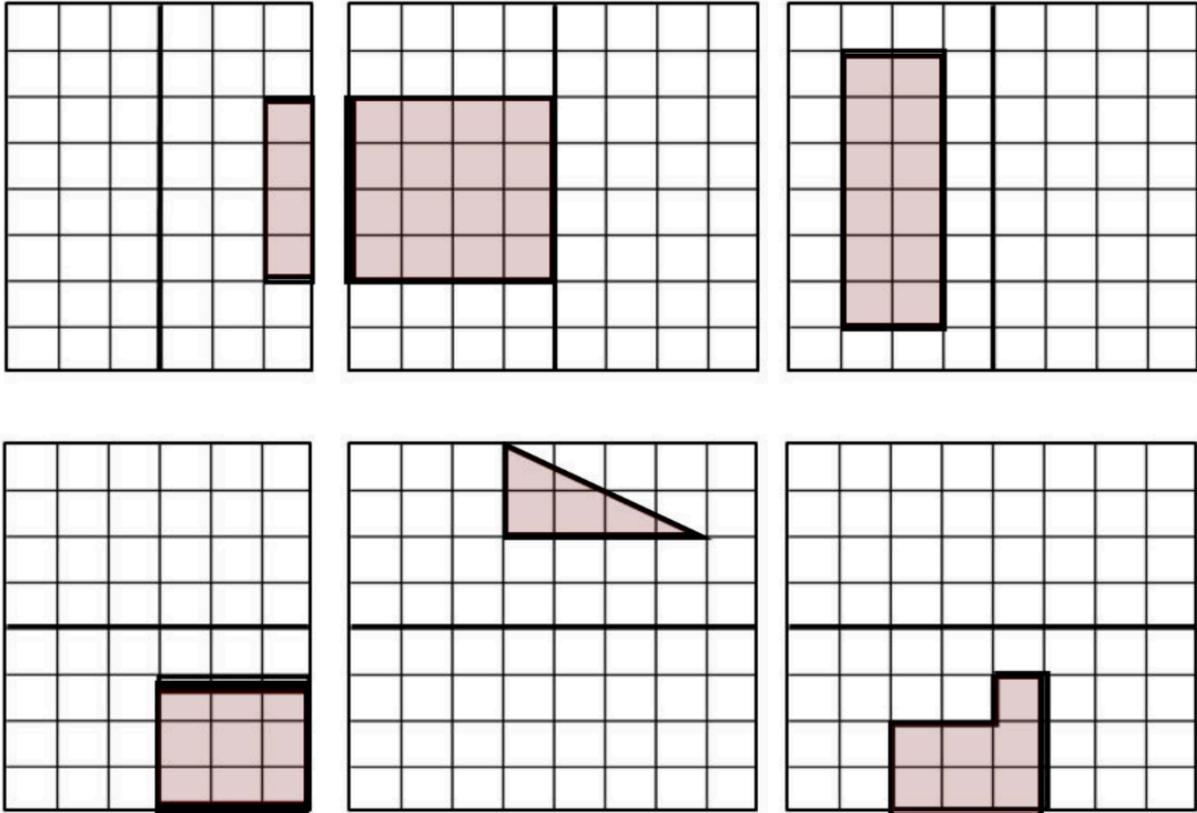
15. Describing rotations using clockwise or counterclockwise.

Rotations can either be clockwise or counterclockwise.

A **clockwise** rotation moves the same way the minute, second, and hour hands move on a clock.

A **counterclockwise** rotation moves the opposite way of a clockwise turn.

Clockwise

We can rotate things a lot or a little. Check out the three turns below.

Counter-
clockwise

360° rotation

180° rotation
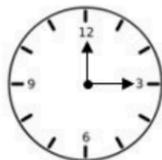
90° rotation

Clockwise
90° rotation
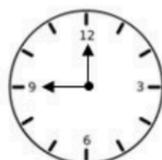
Counterclockwise
90° rotation

Clockwise/Counterclockwise
180° rotation
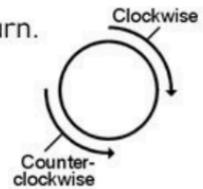
Clockwise/Counterclockwise
360° rotation
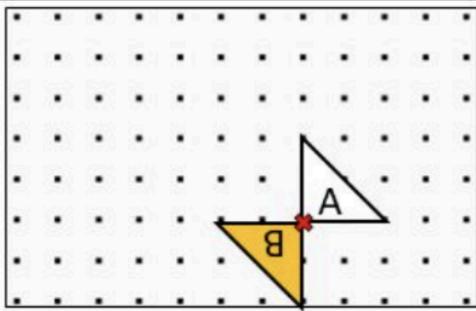
1) _____
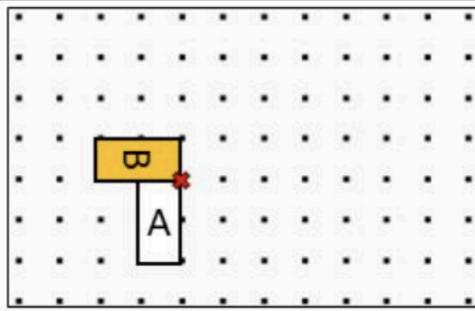
2) _____
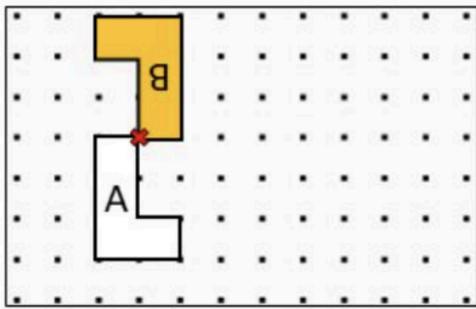
3) _____
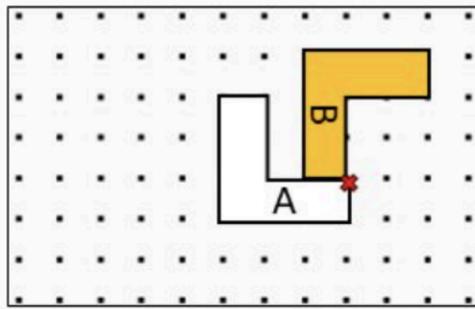
4) _____
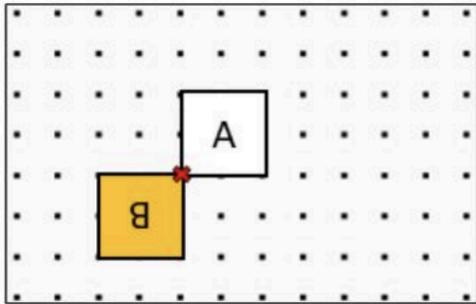
5) _____
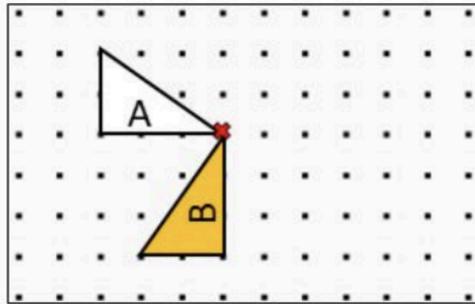
6) _____
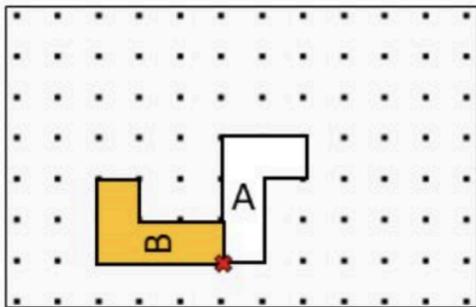
7) _____
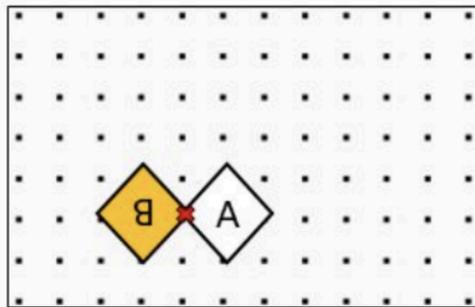
8) _____

16. Rotating shapes around a marked point.

*Your child may use a piece of parchment paper to support them with describing rotations if they would like*
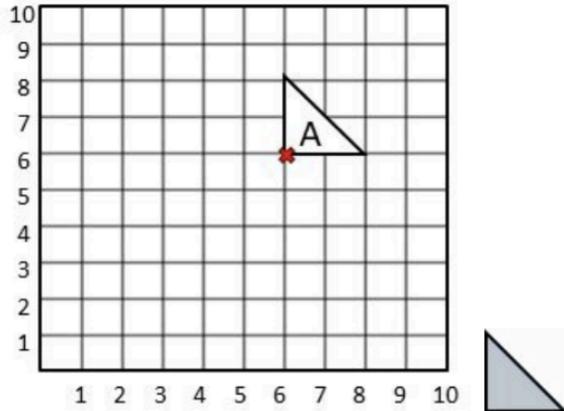

1) 180° rotation
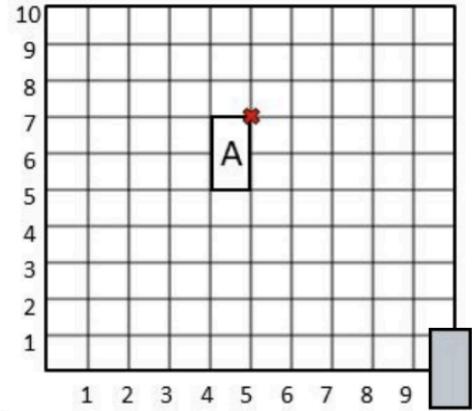
2) 90° counter-clockwise rotation
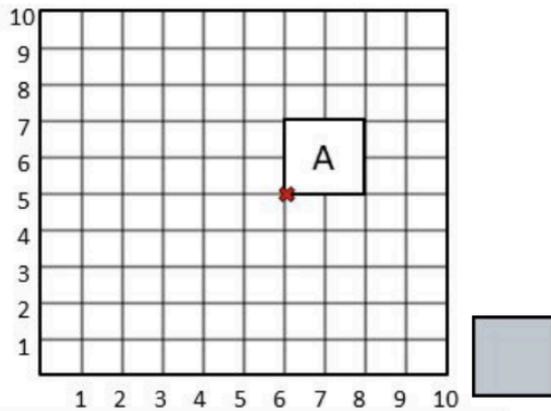
3) 90° clock-wise rotation
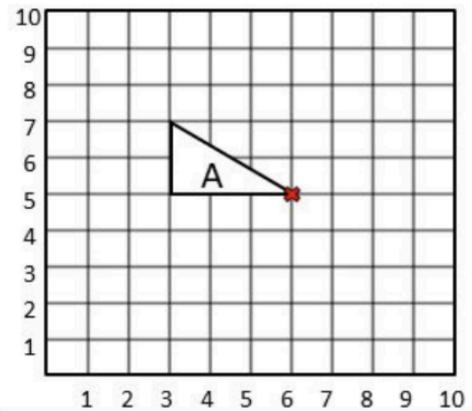
4) 90° clock-wise rotation
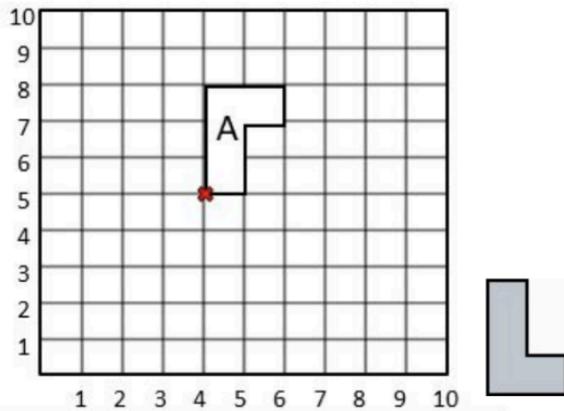
5) 180° rotation

6) 90° counter-clockwise rotation