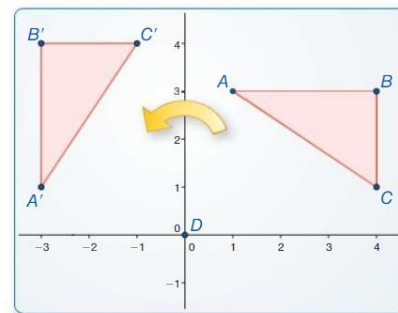Name: _____

Essential Question How can you rotate a figure in a coordinate plane?

EXPLORATION 1 tating Triangle in the Coordinate Plane

Work with your group.

a.) The figure at the right shows $\triangle ABC$ rotated $90°$ counterclockwise around the origin to form $\triangle A'B'C'$. List the coordinates of both triangles below.

$$A(\quad,\quad)\quad A'(\quad,\quad)$$
$$B(\quad,\quad)\quad B'(\quad,\quad)$$
$$C(\quad,\quad)\quad C'(\quad,\quad)$$

b.) Using the coordinates from part (a), write a rule to describe the rotation.

$$(x,y)\rightarrow(\quad,\quad)$$

c.) What do you observe about the angle measures and side lengths of both triangles?

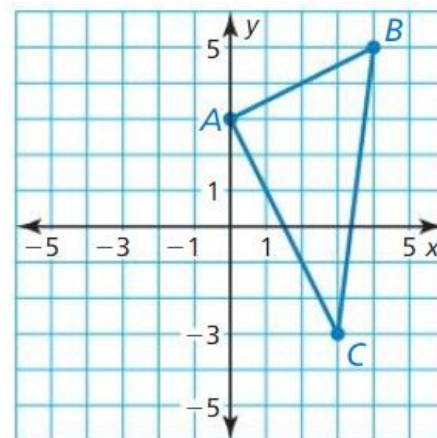**EXPLORATION 2** tating Triangle in the Coordinate Plane

Work with your group.

a.) Using your rule from Exploration 1 part (b), write the coordinates when $\triangle ABC$ below is rotated $90°$ counterclockwise around the origin to form $\triangle A'B'C'$.

$$A(\quad,\quad)\quad A'(\quad,\quad)$$
$$B(\quad,\quad)\quad B'(\quad,\quad)$$
$$C(\quad,\quad)\quad C'(\quad,\quad)$$

b.) Using the coordinates of from part (a), rotate $\triangle ABC$ $90°$ counterclockwise again to form $\triangle A''B''C''$. Write the new coordinates below.

$$A''(\quad,\quad)$$
$$B''(\quad,\quad)$$
$$C''(\quad,\quad)$$

c.) Performing two rotations of $90°$ is the same as performing one rotation of $180°$. Using the coordinates from parts (a) and (b), write a rule to describe a rotation of $180°$.

$$(x,y)\rightarrow(\quad,\quad)$$

Transformation Word Search

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C  S  F  V  G  B  N  R  D  J  V  R  V  K  R  V  J  T  R  B  A  N  Y  A  N  I  B  P  P  K
F  U  G  V  C  F  E  O  C  H  S  L  E  R  C  Y  Z  O  H  F  O  A  F  H  T  D  A  R  R  J
C  S  E  N  B  T  U  X  I  H  A  P  C  A  Z  G  B  F  V  I  M  H  B  X  T  C  Z  E  J  A
T  Z  V  R  N  C  G  C  M  T  X  K  T  G  S  L  K  Q  T  N  G  K  M  Q  I  J  M  I  D  H
B  X  U  E  D  K  O  F  Z  W  C  M  O  R  C  J  O  A  W  I  F  L  F  R  J  T  C  M  Y  B
O  K  C  O  B  H  C  F  I  F  T  E  R  J  V  B  M  D  J  N  Z  R  J  E  M  E  B  A  Q  R
Z  X  E  Q  K  Y  O  H  Y  B  J  M  L  M  C  R  M  B  M  L  T  I  O  P  H  B  K  G  G  C
M  E  J  T  V  M  T  U  B  M  A  S  Q  F  O  Y  D  Z  I  S  E  O  V  S  D  Y  W  E  F  V
K  G  T  G  C  G  E  O  M  E  T  R  Y  F  E  C  E  C  D  K  Y  M  Y  N  O  U  Y  J  S  K
D  P  Q  D  S  H  X  Y  S  R  G  P  S  S  X  B  K  A  C  O  N  T  E  I  R  J  J  A  F
J  C  V  V  M  B  U  L  W  W  N  N  N  M  V  Y  F  G  L  E  D  B  M  L  P  I  F  Y  K  F  P
P  D  H  X  H  J  T  P  J  W  A  A  Y  O  G  M  F  P  K  T  X  X  U  Y  Q  Y  D  R  L  A
Q  G  U  D  H  L  X  R  E  R  B  E  U  G  G  W  M  L  V  U  Y  T  F  B  X  L  I  G  U  Q
M  V  G  D  U  R  O  E  T  A  N  I  D  R  O  O  C  E  T  L  O  Q  S  E  R  W  Q  V  P  O
I  O  K  P  E  S  C  A  O  R  T  E  K  N  U  D  P  Z  T  E  Y  K  V  G  F  K  K  X  M  H
I  V  W  X  F  J  B  Z  E  B  J  E  S  F  L  J  E  U  Y  R  G  T  Z  Y  A  Z  C  D  U  V
G  B  M  T  S  D  Z  E  N  C  J  J  R  W  H  R  A  J  O  V  Y  A  C  Y  Q  H  Q  U  Z  R
N  K  V  Z  R  P  Z  M  O  U  M  H  U  O  E  W  M  R  X  W  S  Q  M  I  Z  F  P  G  E  D
T  A  H  M  L  Y  C  I  G  B  H  M  W  X  S  O  R  T  D  J  C  Y  Z  I  K  W  U  U  I  G
J  D  M  A  K  D  R  R  Y  O  C  C  T  Q  I  I  O  F  T  O  A  V  X  S  Y  K  D  K  C
P  T  N  K  C  V  O  P  L  K  S  J  P  K  W  X  F  W  R  I  M  E  L  G  N  A  I  R  T  D
W  E  G  L  C  T  H  B  O  R  U  L  E  V  K  M  B  A  M  X  P  S  L  K  U  E  B  W  Z  K
E  M  P  E  A  I  G  I  P  Y  O  W  J  N  C  I  N  P  L  Y  O  M  I  R  R  O  R  L  G  N
O  Z  N  T  F  B  H  C  R  J  E  N  N  Z  O  S  A  W  T  P  S  M  U  L  P  S  U  T  Y  C
S  B  I  C  L  F  D  K  I  R  R  S  F  L  U  D  X  X  C  I  O  S  O  E  C  V  H  Y  I
C  O  M  P  O  N  E  N  T  F  O  R  M  A  C  B  R  D  H  C  T  I  K  D  Q  W  B  W  N  B
N  W  E  O  I  E  D  H  N  T  O  D  T  X  V  N  Q  B  O  U  I  G  X  P  E  M  E  M  Z  F
H  G  N  B  Q  X  Z  A  F  D  O  I  T  B  S  O  M  O  A  J  O  O  E  N  Z  Z  G  T  K  G
E  B  R  J  H  I  V  B  C  T  O  Q  V  N  N  K  M  S  R  N  N  D  I  Y  M  X  U  F  M  U
U  P  G  Z  B  J  Q  D  W  N  I  R  E  D  I  L  G  N  J  Z  C  L  K  K  A  V  C  E  K  Q
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CENTER	CLOCKWISE	COMPONENTFORM
COMPOSITION	COORDINATE	GEOMETRY
GLIDE	HICKMAN	IMAGE
KETCHUPEATER	LINE	MIRROR
PLANE	POLYGON	PREIMAGE
PRIME	REFLECTION	ROTATION
RULE	SNOWFLAKE	SYMMETRY
TRANSFORMATION	TRANSLATION	TRIANGLE
URBANC	VECTOR	

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CENTER
CLOCKWISE
COMPONENTFORM
COMPOSITION
COORDINATE PLANE
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HICKMAN
IMAGE
KETCHUPEATER
LINE OF SYMMETRY
MIRROR
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