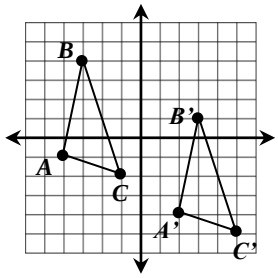
Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples

TRANSFORMATIONS

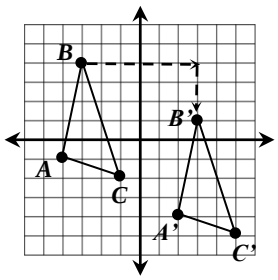


- A transformation is an operation that maps an original figure called the _____ onto a new figure called the _____.
- On the graph to the left, _____ is the preimage and _____ is the image. **(' is read as "prime")**
- A transformation can change the _____, _____, or _____ of a figure.

RIGID MOTION

Examples of rigid motions:

TRANSLATION



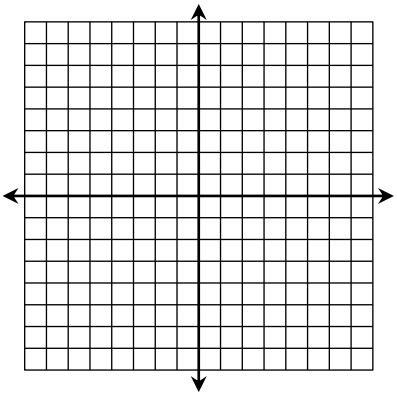
Coordinate Notation: _____

_____ represents the _____

_____ represents the _____

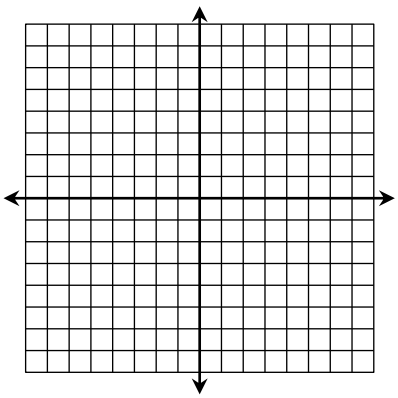
Graph and label each figure and its image under the given translation. Identify the coordinates of the image.

1. Rectangle $QRST$ with vertices $Q(-6, -1)$, $R(-3, 1)$, $S(1, -5)$, and $T(-2, -7)$: $\mathbf{(x, y) \rightarrow (x + 5, y + 7)}$



Q':	S':
R':	T':

2. Triangle CDE with vertices $C(2, -1)$, $D(7, -4)$, and $E(4, -6)$: $\mathbf{(x, y) \rightarrow (x - 3, y + 8)}$



C':	E':
D':	

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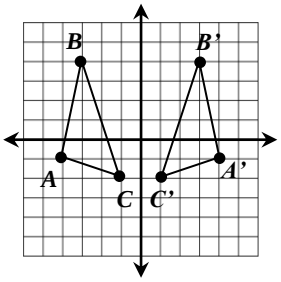
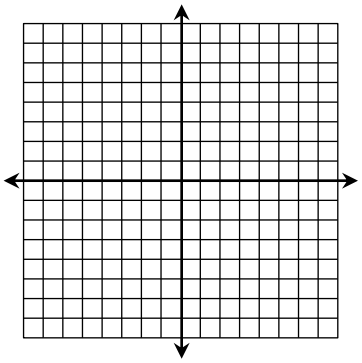
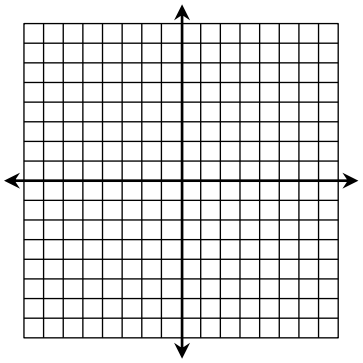
Main Ideas/Questions	Notes/Examples
REFLECTION  	• A _____ over a line called the _____ _____ _____. • Each point and its image are the _____ _____ from the line of reflection. • A reflection is also an example of a _____ _____. **Common lines of reflection:** ➢ _____- _____ or _____- _____ ➢ Vertical or horizontal lines in the form _____ or _____ ➢ Diagonal lines, for example, _____or _____
Reflecting in **THE X-AXIS AND Y-AXIS**	**Graph and label each figure and its image under a reflection in the given line. Give the coordinates of the image.**

1. Triangle ABC with vertices $A(-4, 2)$, $B(4, 7)$, and $C(5, 1)$: ***x*-axis**



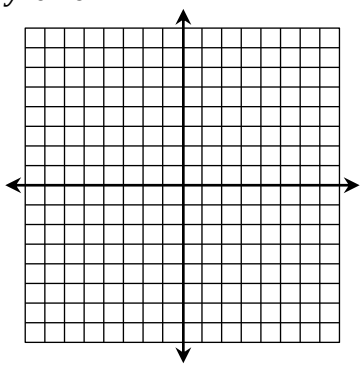
A':	C':
B':	

2. Rectangle $PQRS$ with vertices $P(1, 2)$, $Q(2, 5)$, $R(8, 3)$, and $S(7, 0)$: ***y*-axis**



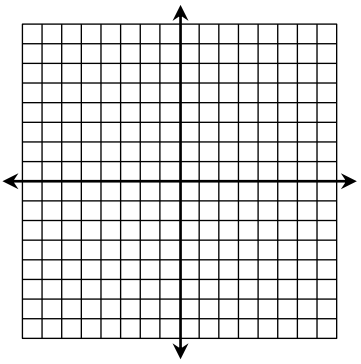
P':	R':
Q':	S':

3. Trapezoid $FGHI$ with vertices $F(-5, -2)$, $G(-2, -2)$, $H(0, -6)$, and $I(-8, -6)$: ***y*-axis**

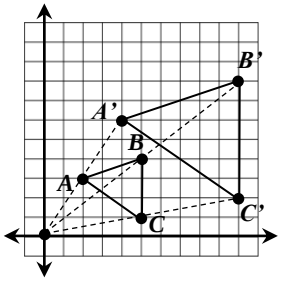


F':	H':
G':	I':

4. Rhombus $WXYZ$ with vertices $W(-2, -4)$, $X(1, -2)$, $Y(4, -4)$, and $Z(1, -6)$: ***x*-axis**



W':	Y':
X':	Z':

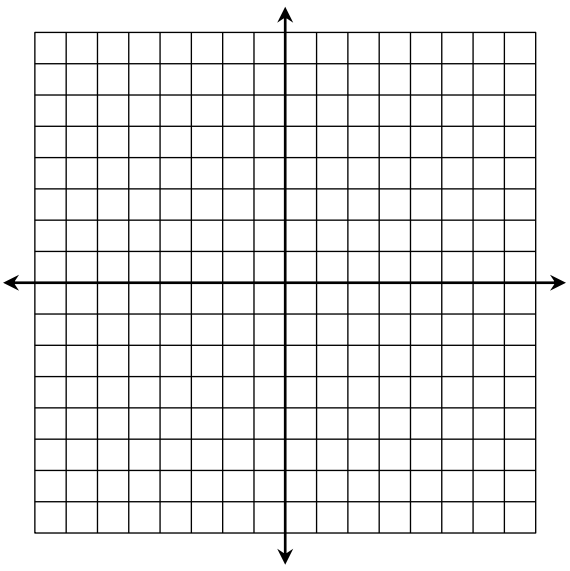
Main Ideas/Questions	Notes/Examples
DILATION 	• A dilation is a _____ of a figure with respect to a fixed point, called the _____ _____ _____. • A dilation is an example of a _____ _____ in that it does not preserve congruency. • A dilation produces _____ _____. • All corresponding angles are congruent, and all corresponding sides are proportional.
SCALE FACTOR	• The **scale factor** indicates how much the figure will enlarge or reduce. • Variable for scale factor: _____ ➢ When _____, the dilation is an _____. ➢ When _____, the dilation is a _____.
DILATION RULE (origin as center)	If $P(x, y)$ is the preimage of a point, then its image after a dilation centered at the origin (0, 0) with scale factor k will follow the rule:

Graph and label each figure and its image under the sequence of transformations. Give the coordinates of the image.

1. Triangle XYZ with vertices X(-3, 7), Y(-2, 1), and Z(-5, 2):

a) reflection in the x-axis

b) translation along the rule $(x, y) \rightarrow (x + 9, y + 2)$



X'(____, ____)

Y'(____, ____)

Z'(____, ____)

Name:	Date:
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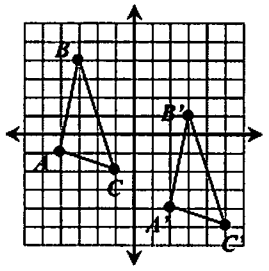
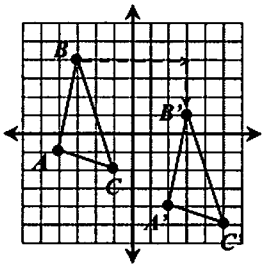
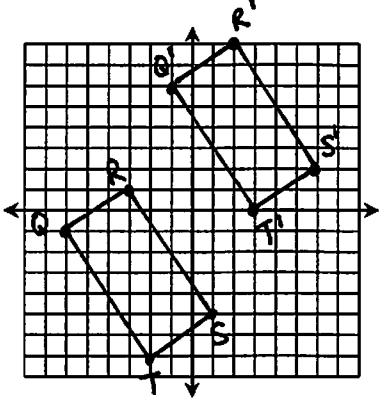
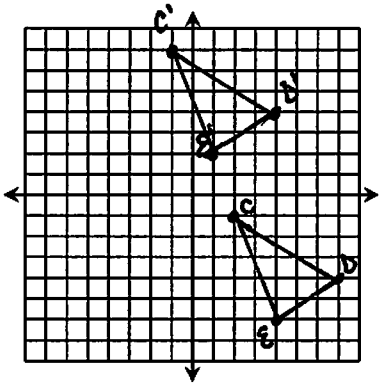
Main Ideas/Questions	Notes/Examples
TRANSFORMATIONS 	• A transformation is an operation that maps an original figure called the pre-image onto a new figure called the image. • On the graph to the left, ΔABC is the pre-image and $\Delta A'B'C'$ is the image. (' is read as "prime") • A transformation can change the position, orientation or size of a figure.
RIGID MOTION	When a transformation preserves the size and shape of a figure. All corresponding sides + angles of the pre-image + image are congruent. **Examples of rigid motions:** translations, reflections, rotations
TRANSLATION 	To vertically and/or horizontally SLIDE a figure **Coordinate Notation:** $(x, y) \rightarrow (x+h, y+k)$ h represents the horizontal shift k represents the vertical shift

Graph and label each figure and its image under the given translation. Identify the coordinates of the image.

1. Rectangle $QRST$ with vertices $Q(-6, -1)$, $R(-3, 1)$, $S(1, -5)$, and $T(-2, -7)$: $(x, y) \rightarrow (x + 5, y + 7)$



2. Triangle CDE with vertices $C(2, -1)$, $D(7, -4)$, and $E(4, -6)$: $(x, y) \rightarrow (x - 3, y + 8)$



Q': (-1, 6)	S': (6, 2)	C': (-1, 7)	E': (1, 2)
R': (2, 8)	T': (3, 0)	D': (4, 4)	

Name:	Date:
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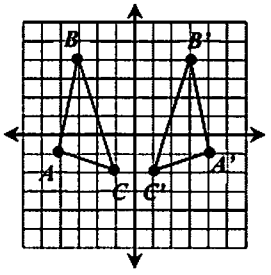
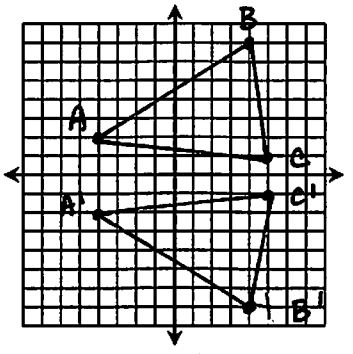
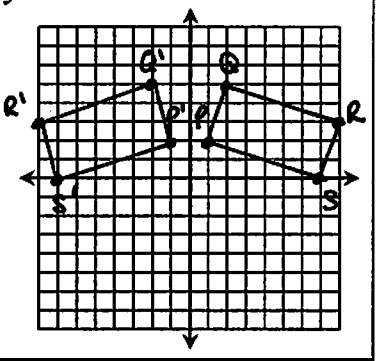
Main Ideas/Questions	Notes/Examples
REFLECTION 	• A FLIP over a line called the line of reflection. • Each point its image are the same distance from the line of reflection. • A reflection is also an example of a rigid motion. **Common lines of reflection:** ➢ x - axis or y - axis ➢ Vertical or horizontal lines in the form x = # or y = # ➢ Diagonal lines, for example, y = x or y = -x
Reflecting in **THE X-AXIS AND Y-AXIS**	**Graph and label each figure and its image under a reflection in the given line. Give the coordinates of the image.**

1. Triangle ABC with vertices $A(-4, 2)$, $B(4, 7)$, and $C(5, 1)$: **x-axis**



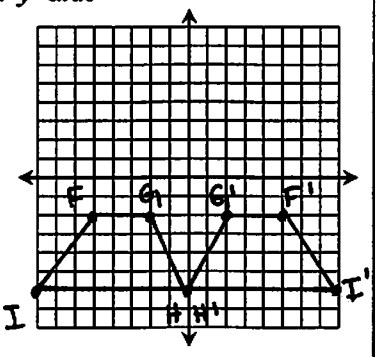
A': (-4, -2)	C': (5, -1)
B': (4, -7)	

2. Rectangle $PQRS$ with vertices $P(1, 2)$, $Q(2, 5)$, $R(8, 3)$, and $S(7, 0)$: **y-axis**



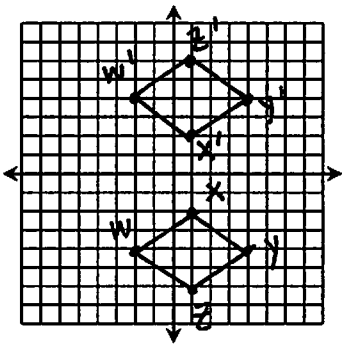
P': (-1, 2)	R': (-8, 3)
Q': (-2, 5)	S': (-7, 0)

3. Trapezoid $FGHI$ with vertices $F(-5, -2)$, $G(-2, -2)$, $H(0, -6)$, and $I(-8, -6)$: **y-axis**



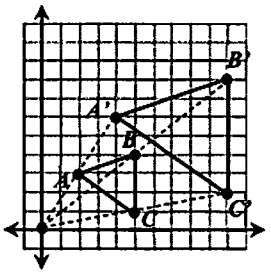
F': (5, -2)	H': (0, -6)
G': (2, -2)	I': (8, -6)

4. Rhombus $WXYZ$ with vertices $W(-2, -4)$, $X(1, -2)$, $Y(4, -4)$, and $Z(1, -6)$: **x-axis**



W': (-2, 4)	Y': (4, 4)
X': (1, 2)	Z': (1, 6)

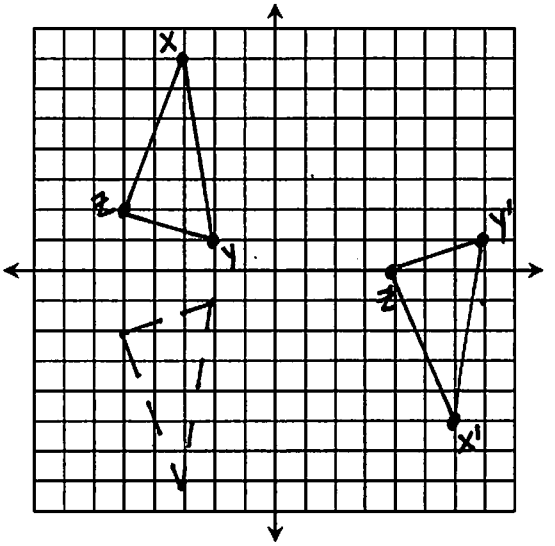
Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
DILATION 	• A dilation is a enlargement or reduction of a figure with respect to a fixed point, called the center of dilation. • A dilation is an example of a nonrigid motion in that it does not preserve congruency. • A dilation produces similar figures. • All corresponding angles are congruent, and all corresponding sides are proportional.
SCALE FACTOR	• The **scale factor** indicates how much the figure will enlarge or reduce. • Variable for scale factor: k ➢ When $k > 1$, the dilation is an enlargement. ➢ When $k < 1$, the dilation is an reduction.
DILATION RULE (origin as center)	If $P(x, y)$ is the preimage of a point, then its image after a dilation centered at the origin (0, 0) with scale factor k will follow the rule: $(x, y) \rightarrow (kx, ky)$

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
SEQUENCES OF Transformations	When two or more transformations are combined to form a transformation.
	Graph and label each figure and its image under the sequence of transformations. Give the coordinates of the image.

1. Triangle XYZ with vertices $X(-3, 7)$, $Y(-2, 1)$, and $Z(-5, 2)$:
   a) reflection in the x-axis
   b) translation along the rule $(x, y) \rightarrow (x + 9, y + 2)$



X'(6 , -5)
Y'(7 , 1)
Z'(4 , 0)