Math 8 Name_____

Transformations Using Algebraic Notation

Date_____ Period____

Find the coordinates of the vertices of each figure after the given transformation.

1) translation: $(x, y) \rightarrow (x, y - 1)$
$Y(-1, 0)$, $F(-1, 3)$, $H(2, 5)$, $Z(4, 1)$

2) translation: $(x, y) \rightarrow (x - 3, y + 1)$
$X(1, -1)$, $D(2, 1)$, $I(5, -1)$, $E(2, -5)$

3) translation: $(x, y) \rightarrow (x - 2, y - 2)$
$V(-2, 1)$, $G(-1, 3)$, $A(4, 2)$, $Q(3, -1)$

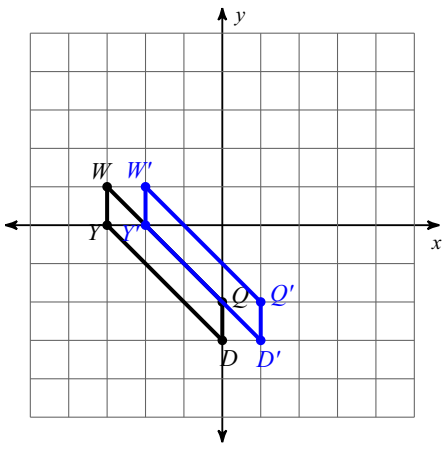
4) translation: $(x, y) \rightarrow (x + 6, y - 6)$
$H(-2, 3)$, $K(-3, 5)$, $S(-1, 5)$, $R(-1, 2)$

5) translation: $(x, y) \rightarrow (x + 8, y - 3)$
$R(-4, 3)$, $K(-4, 4)$, $Q(-3, 3)$

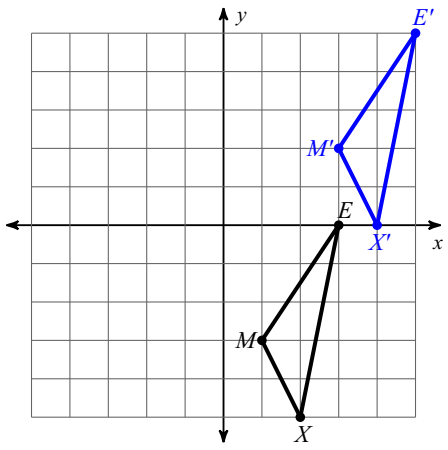
6) translation: $(x, y) \rightarrow (x + 4, y + 5)$
$L(-3, -3)$, $C(-3, -2)$, $H(1, 0)$, $G(0, -4)$

Write a rule to describe each transformation.

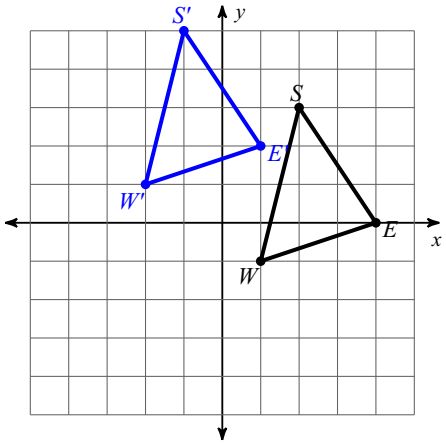
7)



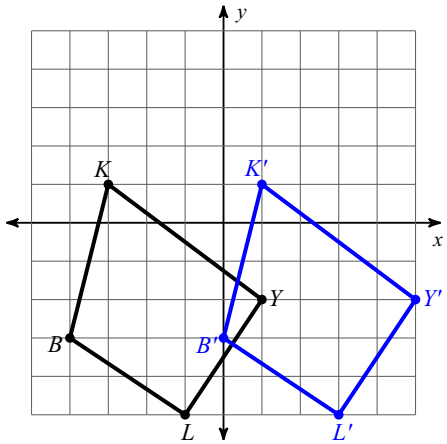
8)



9)



10)



Find the coordinates of the vertices of each figure after the given transformation.

11) rotation 180° about the origin
$V(2, -2)$, $H(3, 0)$, $S(4, -2)$, $F(2, -4)$

12) reflection across the y-axis
$J(1, -1)$, $P(0, 1)$, $Z(4, 4)$, $V(5, 0)$

13) rotation 90° counterclockwise about the origin
$K(0, 2)$, $W(1, 4)$, $R(5, 2)$, $I(5, 1)$

14) rotation 180° about the origin
$S(2, -1)$, $Y(1, 3)$, $W(4, 3)$, $J(4, -1)$

15) reflection across the x-axis
$L(-3, 2)$, $N(-3, 5)$, $H(1, 2)$

16) reflection across the y-axis
$S(2, -4)$, $R(2, 0)$, $J(3, 0)$, $L(3, -3)$

Write a rule to describe each transformation.

17) $N(-3, -3)$, $U(-4, -1)$, $M(-1, -1)$, $S(-1, -3)$
to
$N'(3, 3)$, $U'(4, 1)$, $M'(1, 1)$, $S'(1, 3)$

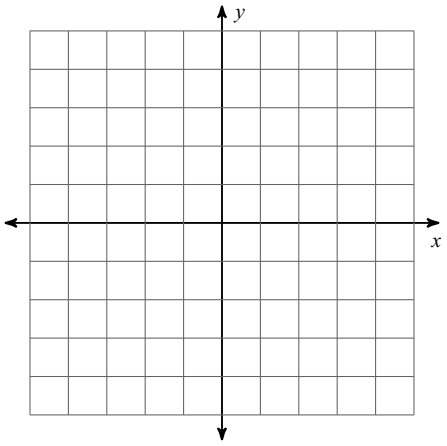
18) $C(-4, -2)$, $V(-4, 3)$, $E(-3, 4)$, $Z(1, 0)$
to
$C'(2, -4)$, $V'(-3, -4)$, $E'(-4, -3)$, $Z'(0, 1)$

19) $L(-4, 4), B(-1, 5), P(-1, 2)$
to
$B'(1, 5), P'(1, 2), L'(4, 4)$

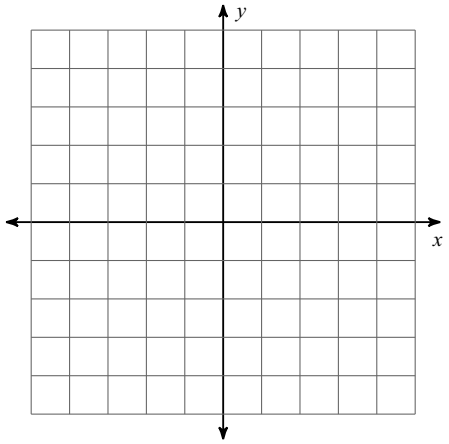
20) $D(-1, 0), S(1, 3), E(3, 3)$
to
$S'(-1, 3), E'(-3, 3), D'(1, 0)$

Graph the image of the figure using the transformation given.

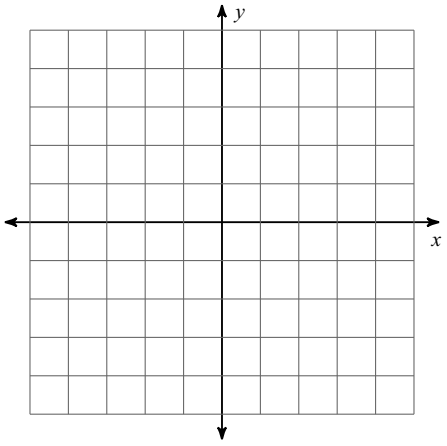
21) rotation 180° about the origin
$U(2, -2), Z(1, 1), W(4, 1), X(4, -4)$



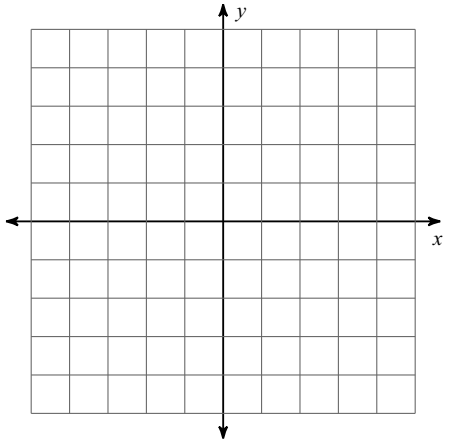
22) translation: $(x, y) \rightarrow (x + 3, y + 1)$
$U(-3, -2), P(-2, -1), D(-1, -4)$



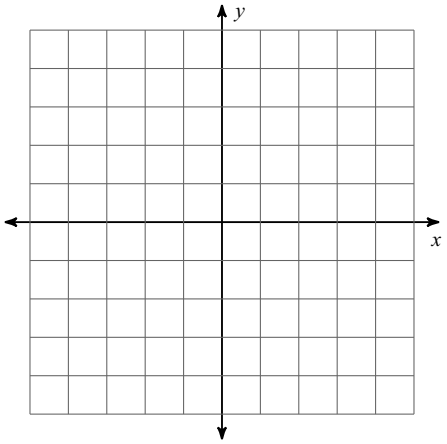
23) reflection across the x-axis
$V(1, 3), N(1, 4), X(2, 4), A(3, 2)$



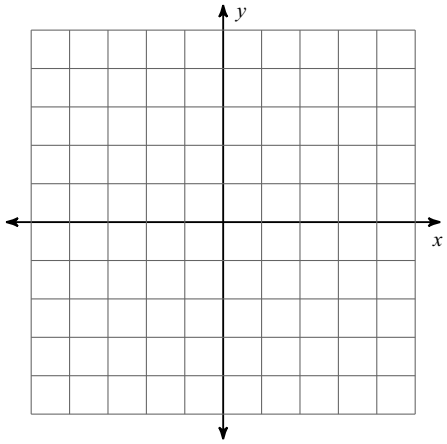
24) translation: $(x, y) \rightarrow (x + 2, y - 3)$
$R(-2, 3), F(-1, 4), A(3, 3), D(0, 1)$



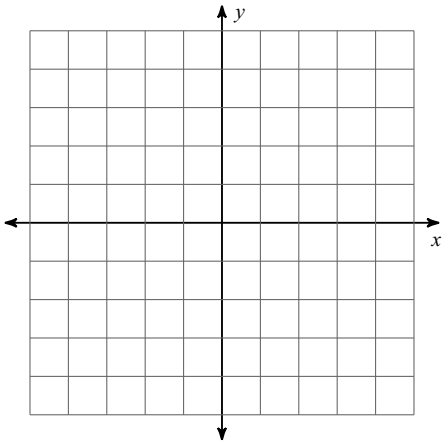
25) translation: $(x, y) \rightarrow (x + 4, y + 1)$
$P(-5, -3)$, $Z(-4, 0)$, $T(-3, -3)$



26) translation: $(x, y) \rightarrow (x, y - 2)$
$A(-4, 4)$, $S(-4, 5)$, $B(-3, 5)$, $Z(-3, 1)$



27) reflection across the x-axis
$B(-4, -4)$, $J(-2, -2)$, $W(-1, -5)$



28) rotation 180° about the origin
$I(0, -2)$, $F(0, -1)$, $U(4, 1)$, $R(2, -3)$