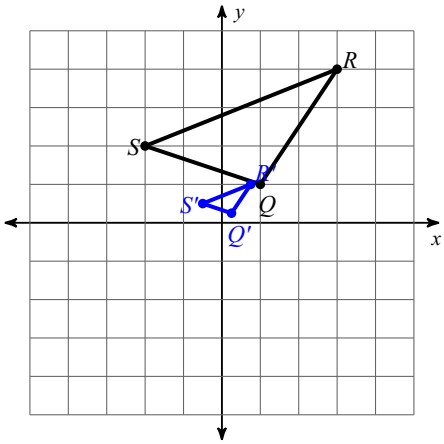
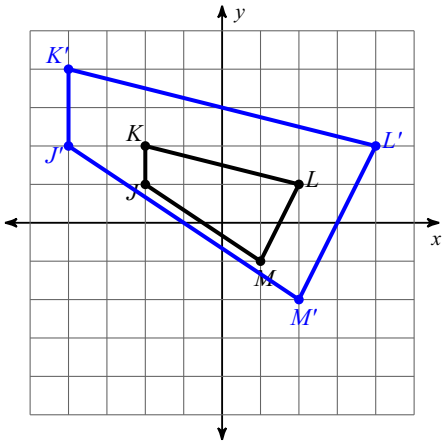
**Write a rule to describe each transformation.**

1)




2)

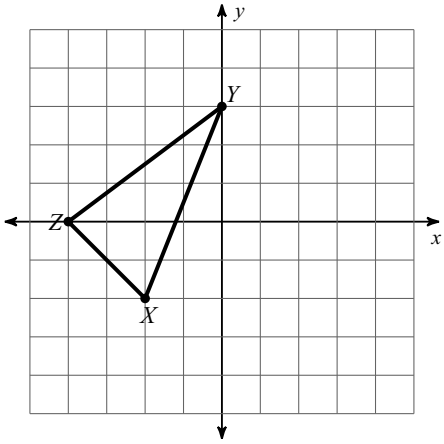



3) $I(-2, 0), J(2, 2), K(3, -1)$
to
$I'(-3, 0), J'(3, 3), K'(4.5, -1.5)$

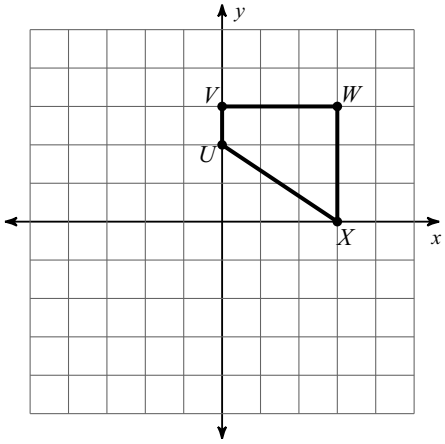
4) $D(-1, 3), E(1, 5), F(3, 3)$
to
$D'(-0.5, 1.5), E'(0.5, 2.5), F'(1.5, 1.5)$

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

5) dilation of 0.5




6) dilation of 1.5




7) dilation of 2
$U(-2, -1), V(-2, 2), W(2, 1)$

8) dilation of 0.25
$S(-3, -5), T(-2, -3), U(1, -3), V(0, -5)$

9) translation: 4 units right and 1 unit up
$C(-3, 2), D(0, 3), E(-2, 1)$

10) translation: 5 units right and 2 units up
$D(-5, -4), E(-3, -1), F(-1, -4)$

11) reflection across the x-axis
$J(-4, 3), K(-2, 4), L(-1, 1)$

12) reflection across the y-axis
$P(-3, 4), Q(-3, 5), R(0, 4), S(1, 2)$

13) rotation 180° about the origin
$J(3, 1), K(1, 4), L(1, 5), M(4, 3)$

14) rotation 90° counterclockwise about the origin
$K(2, 0), J(2, 5), I(5, 2), H(3, -2)$

15) rotation 90° clockwise about the origin
$I(-2, 0), J(-4, 3), K(-3, 3), L(1, 1)$

16) rotation 90° counterclockwise about the origin
$F(-2, -3), E(-2, 0), D(3, 1), C(2, -4)$