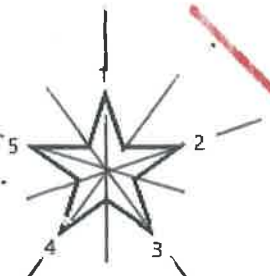


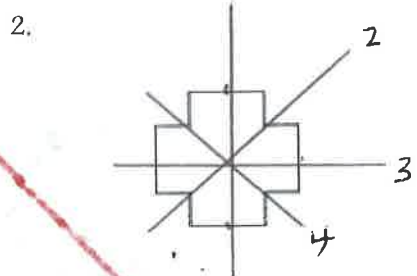
Unit 2 Study Guide Study Guide - Transformations and Symmetry

Lines of Symmetry: Draw the lines of symmetry for each graph and describe the order and magnitude (in degrees) of each that map the object onto itself.

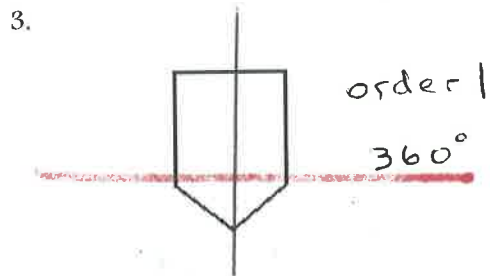
1.
order = 5
mag = $\frac{360}{5}$
= 72°



Also, if you rotated this star from point 1 to 4, how many degrees would that be for it to map onto itself? 2 rotations of 72°
So, $72(2) = 144^\circ$

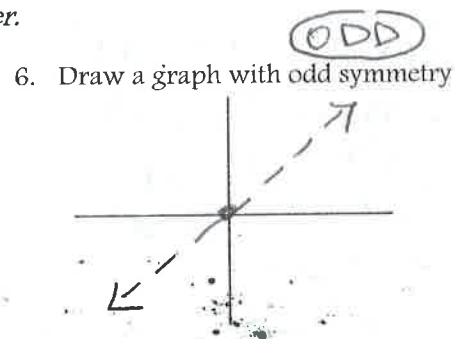
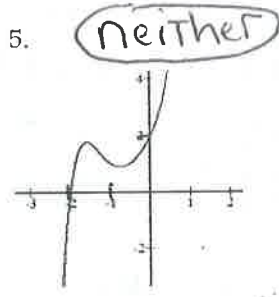
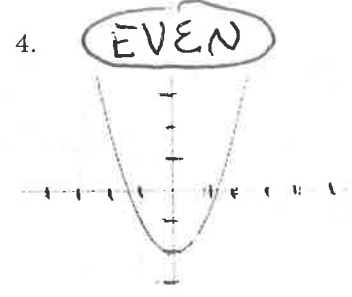


order = 4
Mag = $\frac{360}{4} = 90^\circ$



order = 1
 360°

Even/Odd/Neither Symmetry: Determine if the function is even, odd, or neither.

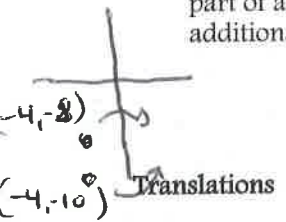


7. If points $(-4, -8)$ and $(-4, -10)$ are known to be part of a graph that has **even symmetry**, state what additional points must also be part of the graph.

$(4, 8)$ & $(4, 10)$

8. If points $(3, -6)$ and $(-2, 7)$ are known to be part of a graph that has **odd symmetry**, state what additional points must also be part of the graph.

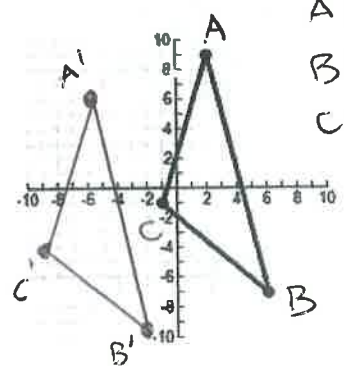
$(-3, 6)$ & $(2, -7)$
MUST rotate 180°
 $R(x, y) \rightarrow (-x, -y)$



9. Complete the following translation

$T(x, y) \rightarrow (x - 8, y - 3)$

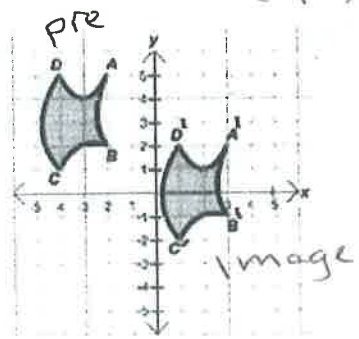
$A(2, 9) \rightarrow A'(-6, 6)$
 $B(6, -7) \rightarrow B'(-2, -10)$
 $C(-1, -1) \rightarrow C'(-9, -4)$



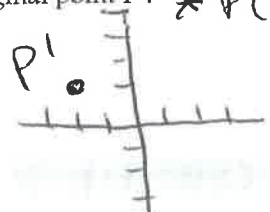
10. Write a function for the translation

$T(x, y) = T(5, -3)$

$T(x+5, y-3)$



11. Given the new image $P'(-2, 1)$ and the translation $T(x, y) = (x - 4, y - 3)$, determine the coordinates of the original point P? * $P(2, 4)$



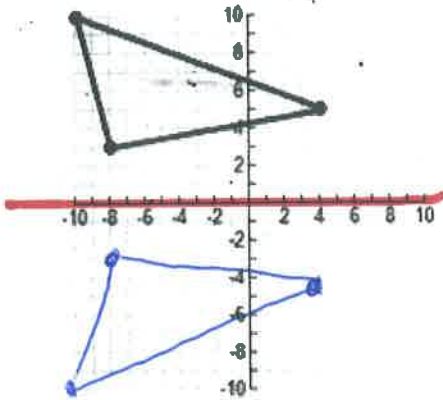
$x - 4 = (-2) \Rightarrow x - 4 = -2 \Rightarrow x = 2$
 $y - 3 = (1) \Rightarrow y - 3 = 1 \Rightarrow y = 4$

* work backwards *

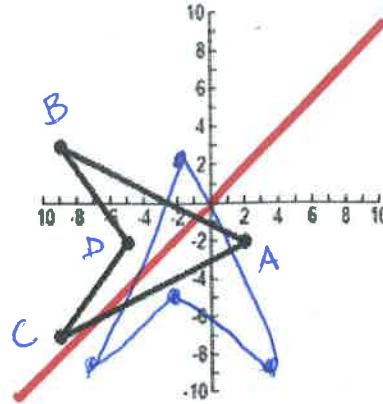
P(2, 4)

Reflections

12. Reflect the object across the x-axis



13. Complete the reflection: $R_{y=x}$



$R_{y=x}$
 rule $(x,y) \rightarrow (y,x)$
 $(2,-2) \rightarrow (-2,2)$
 $(-9,3) \rightarrow (3,-9)$
 $(-9,-7) \rightarrow (-7,-9)$
 $(-5,-2) \rightarrow (-2,-5)$

Using points $(-10, 7), (8, -4), (9, 6)$, perform the following transformations

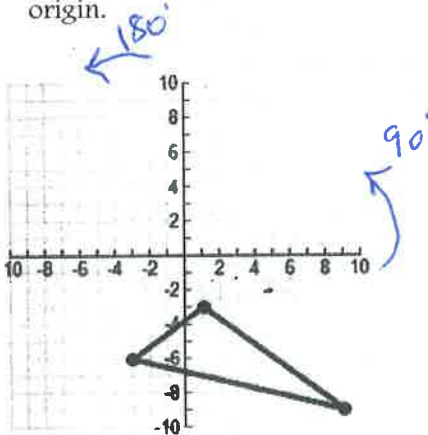
$R(x,y) \rightarrow (x,-y)$

14. Reflect all points about the x-axis

$(-10,7) \rightarrow (-10,-7)$
 $(8,-4) \rightarrow (8,4)$
 $(9,6) \rightarrow (9,-6)$

Rotations

17. Rotate the object 180° about the origin.

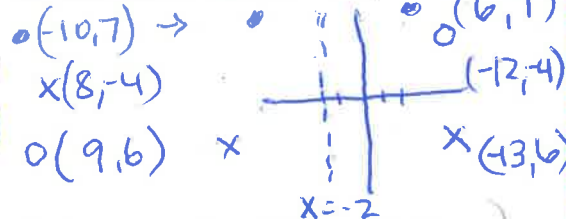


$R(x,y) \rightarrow (-x,y)$

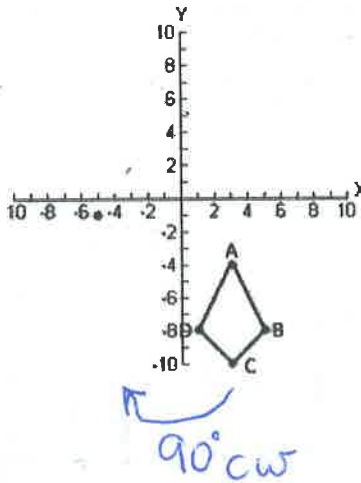
15. Reflect all points about the y-axis

$(-10,7) \rightarrow (10,7)$
 $(8,-4) \rightarrow (-8,-4)$
 $(9,6) \rightarrow (-9,6)$

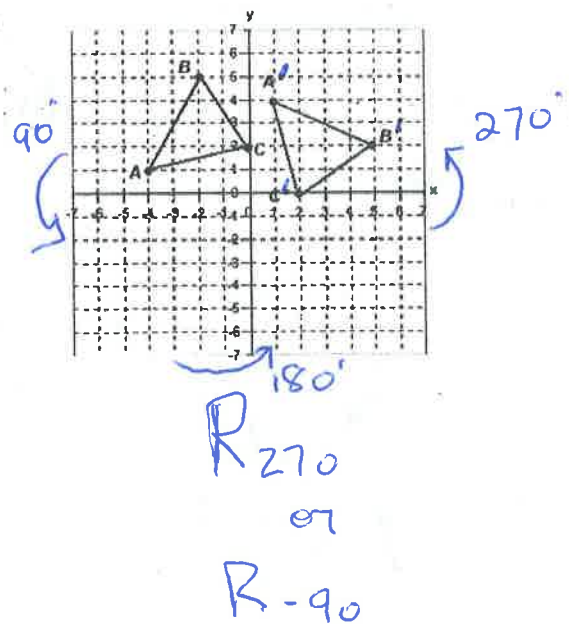
16. Reflect about the line $x = -2$.



18. Rotate the figure 90° clockwise about the origin.

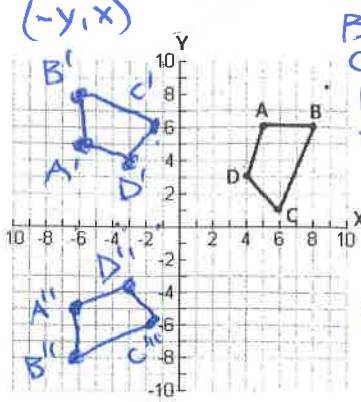


19. Determine the rule that performs the rotation.



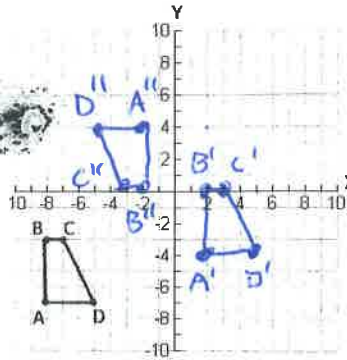
aning Transformations – Make sure you label the post-image.

20. R_{90} and R_{x-axis}



- $A(5, 6)$
 $B(8, 6)$
 $C(6, 1)$
 $D(4, 3)$
-
- $A'(-6, 5)$
 $B'(-6, 8)$
 $C'(-1, 6)$
 $D'(-3, 4)$
-
- $A''(-6, -5)$
 $B''(-6, -8)$
 $C''(-1, -6)$
 $D''(-3, -4)$

21. $T(x + 10, y + 3)$ and R_{180}



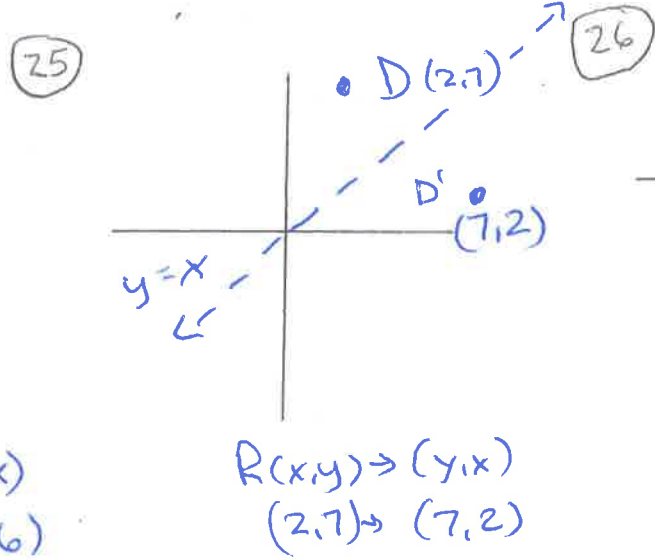
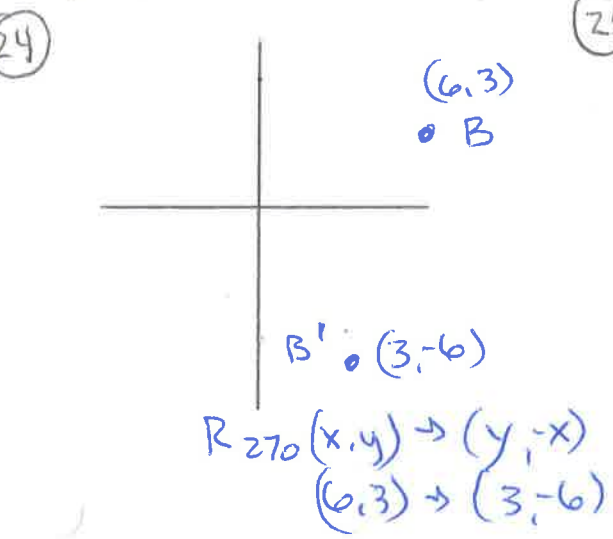
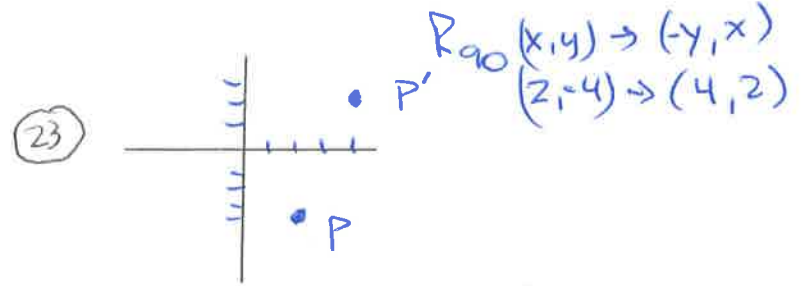
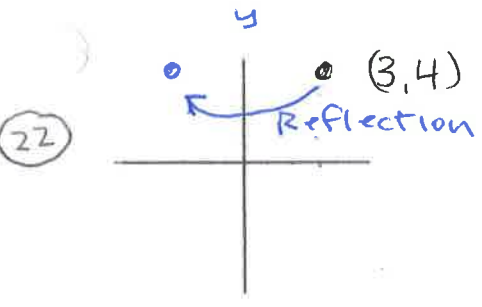
- $A(-8, 7)$
 $B(-8, 3)$
 $C(-7, 3)$
 $D(-5, 7)$
-
- $A'(2, -4)$
 $B'(2, 0)$
 $C'(3, 0)$
 $D'(5, -4)$
-
- $A''(-2, 4)$
 $B''(-2, 0)$
 $C''(-3, 0)$
 $D''(-5, 4)$

Write the location of the point once the requested transformation has been completed.

22. Reflect $M(3, 4)$ across the y-axis.
 23. Rotate $P(2, -4)$ 90° around the origin.
 24. Given $B(6, 3)$ transform by $R_{270}(x, y)$.
 25. Given $D(2, 7)$ transform by $R(x, y) = (y, x)$.
 26. For #25, what is the line of reflection?

- $(-3, 4)$
 $(4, 2)$
 $(3, -6)$
 $(7, 2)$
 $y = x$

Sketch graphs



26

see #25 graph