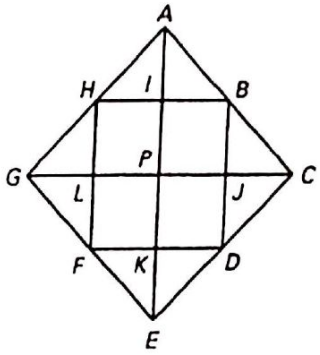
Name: Key

Transformations Test Review Homework

Using the figure shown, find the image for the specified transformation.



1. 90° clockwise rotation of $\overline{AB}$ about P. $\overline{CD}$
2. 90° clockwise rotation of D about P. F
3. 90° counterclockwise rotation of $\overline{GH}$ about P. $\overline{EF}$
4. 180° counterclockwise rotation of $\overline{EF}$ about P. $\overline{AB}$
5. 180° clockwise rotation of ΔCJD about P. ΔGLH
6. 90° counterclockwise rotation of ΔGLF about P. ΔEKD

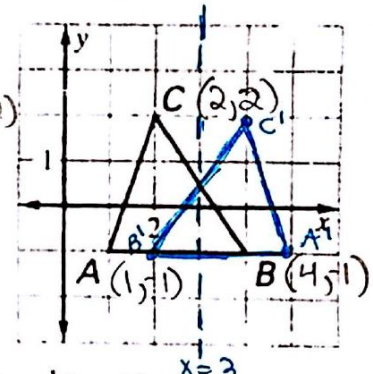
7. Rotate the quadrilateral with coordinates A(1, 1), B(3, 1), C(6, 4), and D(1, 3), given the angles shown. Then graph each pair of quadrilaterals on the same coordinate plane.

$(x,y)\to(-y,x)$ a. 90° A'(-1,1) B'(-1,3) C'(-4,6) D'(-3,1) b. 180° $(x,y)\to(-x,-y)$ A'(-1,-1) B'(-3,-1) C'(-6,-4) D'(-1,-3) c. 270° $(x,y)\to(y,-x)$ A'(1,-1) B'(1,-3) C'(4,-6) D'(3,-1) d. 360° $(x,y)\to(x,y)$ Same as

8. Reflect the triangle with coordinates D(-3, 0), E(-4, 4), and F(1, 1) in each line. Then graph each pair of triangles on the same coordinate plane.

$(x,y)\to(-x,y)$ a. y-axis D'(3,0) E'(4,4) F'(-1,1) b. x-axis $(x,y)\to(x,-y)$ D'(-3,0) E'(-4,-4) F'(1,-1) c. $y=x$ $(x,y)\to(y,x)$ D'(0,-3) E'(4,-4) F'(1,1) d. $y=-x$ $(x,y)\to(-y,-x)$ D'(0,3) E'(-4,4) F'(-1,-1)

Perform the stated transformation on the preimage, ΔABC. Give the coordinates of the image, ΔA'B'C'.



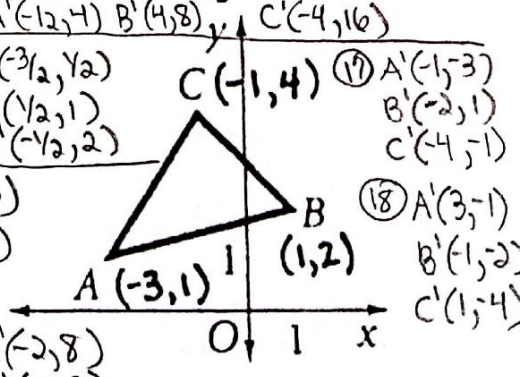
9. Rotation 90° clockwise about the origin 270° ccw $(x,y)\to(y,-x)$ A'(-1,-1) B'(-1,-4) C'(2,-2)
10. Reflection in x = 3 A'(5,-1) B'(2,-1) C'(4,2)
11. Translation $(x, y) \to (x + 3, y - 2)$ A'(4,-3) B'(7,-3) C'(5,0)

Perform the stated algebraic rule on the preimage, ΔABC. Give the coordinates of the image, ΔA'B'C'. Specifically describe the transformation.

12. $(x, y) \to (-x, -y)$ Rotated 180° centered on the origin. A'(-1,1) B'(-4,1) C'(-2,-2)
13. $(x, y) \to (x - 3, y - 2)$ Translated left 3, down 2. A'(-2,-3) B'(1,-3) C'(-1,0)
14. $(x, y) \to (-2y, -2x)$ Reflected over $y=-x$ and enlarged by 2. A'(2,-2) B'(2,-8) C'(2,-8)

For #15-22, use ΔABC. Write the coordinates of each image, then write its algebraic rule.

15. a dilation four times the original size $(x,y)\to(4x,4y)$ A'(-12,-4) B'(4,8) C'(-4,16)
16. a dilation half the original size $(x,y)\to(\frac{1}{2}x,\frac{1}{2}y)$ A'(-3/2,1/2) B'(1/2,1) C'(-1/2,2)
17. a rotation of 90° $(x,y)\to(-y,x)$ A'(-1,-3) B'(-2,1) C'(-4,-1)
18. a rotation of 180° $(x,y)\to(-x,-y)$ A'(3,-1) B'(1,-2) C'(1,-4)
19. a translation 2 units left and 3 units down $(x,y)\to(x-2,y-3)$ A'(-5,-2) B'(-1,-1) C'(-3,1)
20. a translation 1 unit right and 7 units up $(x,y)\to(x+1,y+7)$ A'(-2,8) B'(2,9) C'(0,11)
21. a reflection in y = x $(x,y)\to(y,x)$ A'(1,-3) B'(2,1) C'(4,-1)
22. a reflection in the x-axis $(x,y)\to(x,-y)$ A'(-3,-1) B'(1,-2) C'(-1,-4)

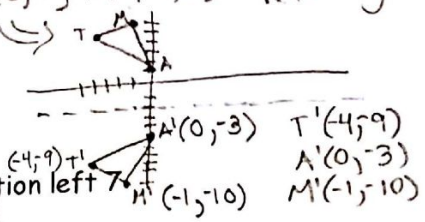


Find a single transformation that has the same effect as the composition of transformations indicated. Describe the transformation specifically. Then write the algebraic rule for the composition.

23. ⟨-5, -7⟩ followed by ⟨3, 6⟩ ⟨-2, -1⟩ Translated left 2, down 1 $(x,y) \to (x-2, y-1)$
24. ⟨10, -9⟩ followed by ⟨1, 5⟩ ⟨11, -4⟩ Translated right 11, down 4 $(x,y) \to (x+11, y-4)$
25. Translation up 3 and right 4, and a reflection over y = -x. $(x,y) \to (-y-3, -x-4)$ (description given) and $(x,y) \to (-y,-x)$ combined
26. Reflection over y = 0 and reduction by 1/3. $(x,y) \to (\frac{x}{3}, \frac{-y}{3})$
$(x,y) \to (x, -y)$ and $(x,y) \to (\frac{1}{3}x, \frac{1}{3}y)$ combined

Triangle TAM has vertices T(0, 5), A(4, 1), and M(3, 6).

27. What is the domain and range of TAM in interval notation? D: [0, 4] R: [1, 6]
28. Find the image of triangle TAM after performing the glide vector ⟨-4, 0⟩ and reflection in the line y = -2. Label the image T'A'M'. with glide T(-4,5) A(0,1) M(-1,6) then ref in y = -2



29. What is the domain and range of T'A'M' in interval notation? D: [-4, 0] R: [-10, -3]

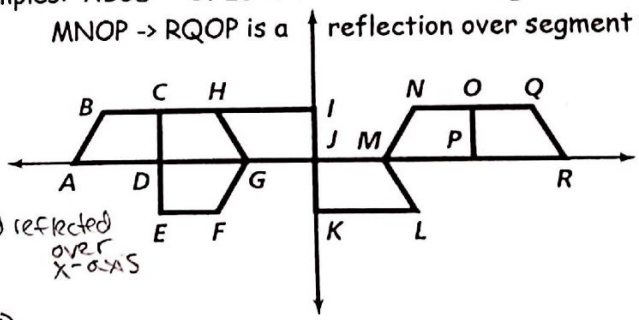
Find a function rule for the transformation of c(x) with ...

31. Translation left 5, up 3, vertical stretch by 2 $y = 2c(x+5) + 3$
32. Reflection over the x-axis, vertical compression of $\frac{1}{2}$, and translation left 7 $y = -\frac{1}{2}c(x+7)$
33. Reflection over y-axis and translation down 4 $y = c(-x) - 4$

Given the function rule shown, determine the transformations of h(x).

34. $y = -3h(x-2) + 1$ reflection over x-axis, vertical stretch by 3, translated right 2 + up 1
35. $y = \frac{1}{2}h(-x) - 4$ vertical compression by 1/2, reflection over y-axis, and translated down 4
36. $y = -h(x+7) + 5$ reflection over x-axis, translated left 7 and up 5

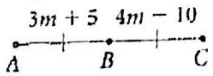
Specifically describe each transformation. Examples: ABCD -> GFED is a rotation 180 degrees about D. MNOP -> RQOP is a reflection over segment OP.



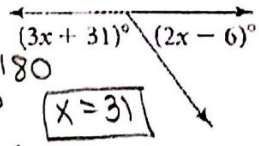
37. $\triangle ABCD \to \triangle GHCD$ reflection over $\overline{CD}$
38. $\triangle HGJI \to \triangle LMJK$ rotated 180° about origin
39. $\triangle GFED \to \triangle RQOP$ glide reflection then translated right 6 units and reflected over x-axis (or DP units)
40. $\triangle MNOP \to \triangle ABCD$ translated left 4 units (or DP units)

Solve given the information provided

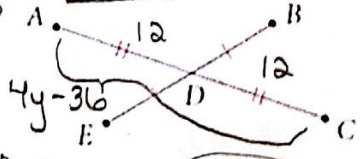
41. a. Solve for m. $3m+5 = 4m-10$ $15 = m$



b. Solve for x. $(3x+31) + (2x-6) = 180$ $5x + 25 = 180$ $5x = 155$ $x = 31$

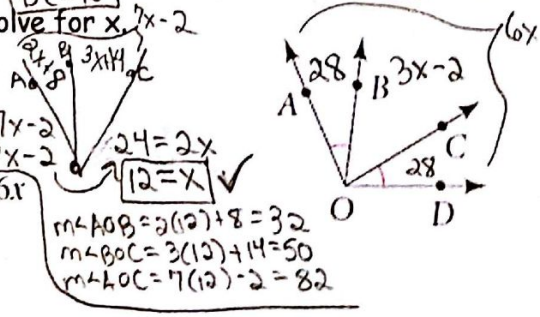


42. If AD = 12 and AC = 4y - 36, find y. Then find AC and DC. Given AD = DC by markings $AD + DC = AC$ $12 + 12 = 4y - 36$ $24 = 4y - 36$ $60 = 4y$ $y = 15$ AC = 24 DC = 12



Use the diagram, below right, for Exercises 43 and 44. Solve for x. (Hint: Find the angle measures to check your work.)

43. $m\angle AOC = 7x - 2, m\angle AOB = 2x + 8, m\angle BOC = 3x + 14$ $(2x+8) + (3x+14) = 7x - 2$ $5x + 22 = 7x - 2$ $24 = 2x$ $12 = x$ ✓



$m\angle AOB = 2(12) + 8 = 32$
$m\angle BOC = 3(12) + 14 = 50$
$m\angle AOC = 7(12) - 2 = 82$

44. $m\angle AOB = 28, m\angle BOC = 3x - 2, m\angle AOD = 6x$ $m\angle AOB = m\angle COD$ by markings, so $m\angle COD = 28$ $6x = 28 + (3x-2) + 28$ $6x = 3x + 54$ $3x = 54$ $x = 18$ ✓