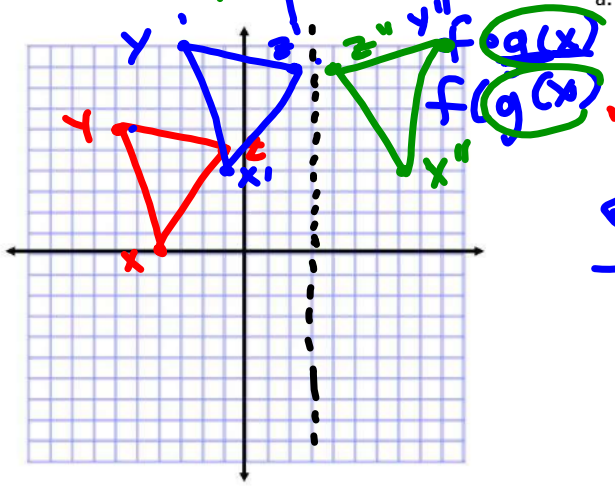
Bell Ringer

Section 9.4 – Composition of Isometries

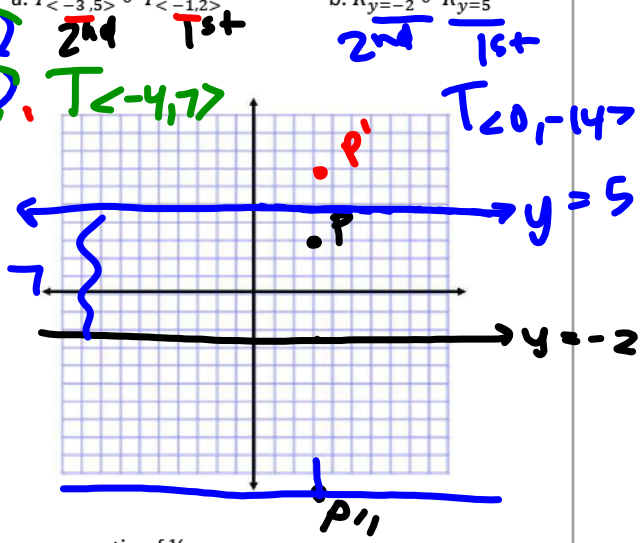
1. ΔXYZ has vertices X(-4, 0), Y(-6, 6) and Z(-1, 5). What are the coordinates of the vertices of $(R_{x=-1} \circ T_{<3,4>})(\Delta XYZ)$

X''(7 , 4), Y''(9 , 10), Z''(4 , 9)



2. Write a single transformation rule that has the same effect on the point shown as each composition of transformations.

a. $T_{<-3,5>} \circ T_{<-1,2>}$



b. $R_{y=-2} \circ R_{y=5}$

3. Write an exponential equation with a y-intercept of 3 and a common ratio of ½

4. Write a linear equation with a y-intercept of 3 and a slope of ½

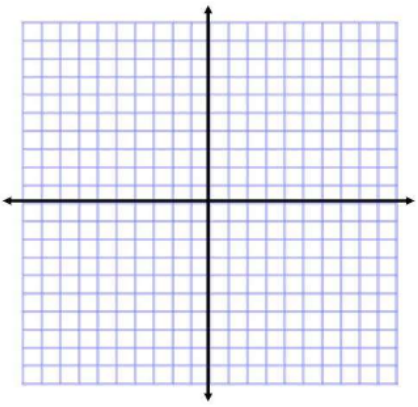
5. Write an exponential equation of a geometric sequence with an initial value of 3 and a common ratio of ½

Solutions

Section 9.4 – Composition of Isometries

1. ΔXYZ has vertices X(-4, 0), Y(-6, 6) and Z(-1, 5). What are the coordinates of the vertices of $(R_{x=3} \circ T_{<3,4>})(\Delta XYZ)$

X''(7 , 4), Y''(9 , 10), Z''(4 , 9)



2. Write a single transformation rule that has the same effect on the point shown as each composition of transformations.

a. $T_{<-3,5>} \circ T_{<-1,2>}$

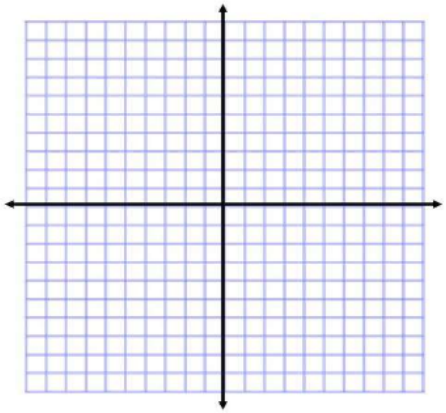
$T_{<-4,7>}$

(left 4 and up 7)

b. $R_{y=-2} \circ R_{y=5}$

$T_{<0,-14>}$

Translates down 14



3. Write an exponential equation with a y-intercept of 3 and a common ratio of ½

$Y = 3(\frac{1}{2})^x$

4. Write a linear equation with a y-intercept of 3 and a slope of ½

$Y = \frac{1}{2}x + 3$

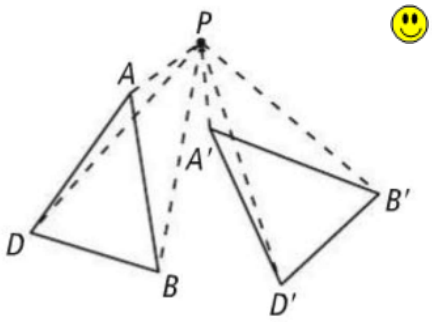
5. Write an exponential equation of a geometric sequence with an initial value of 3 and a common ratio of ½

$A(n) = 3(\frac{1}{2})^{n-1}$

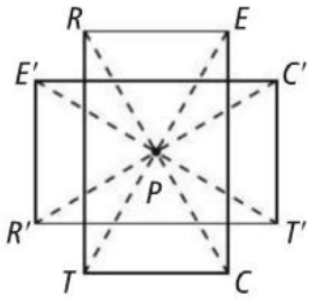
$a_n = 3(\frac{1}{2})^{n-1}$

correct 9.3 #s 1-4, 7-9, 11-14, 20, 27-32

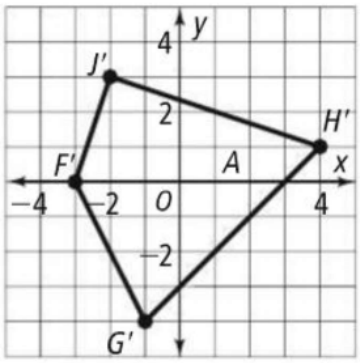
1.



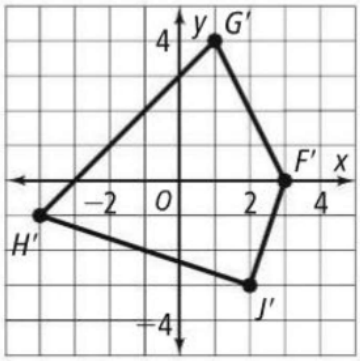
2.



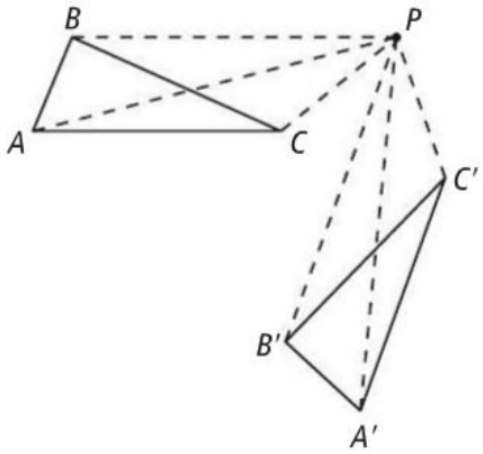
3.



4.



7.

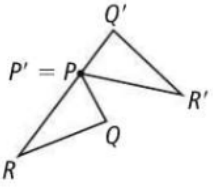


8. R

9. $\overline{SE}$

11. Draw $\overline{AO}$ and $\overline{A'O}$ and then measure $\angle AOA'$.

12. The diagram shows a reflection, not a rotation. R' is a 115° clockwise rotation of R. All points of $\triangle PQR$ must be rotated counterclockwise.



13. Both are rigid motions. A reflection reverses orientation. A rotation has the same orientation.

14. $(-x, -y)$; Sample: The coordinates are the same as a single rotation of 180° since 135° + 45° = 180°.

20. 168.75°

27. H

28. M

29. $\overline{BC}$

30. C

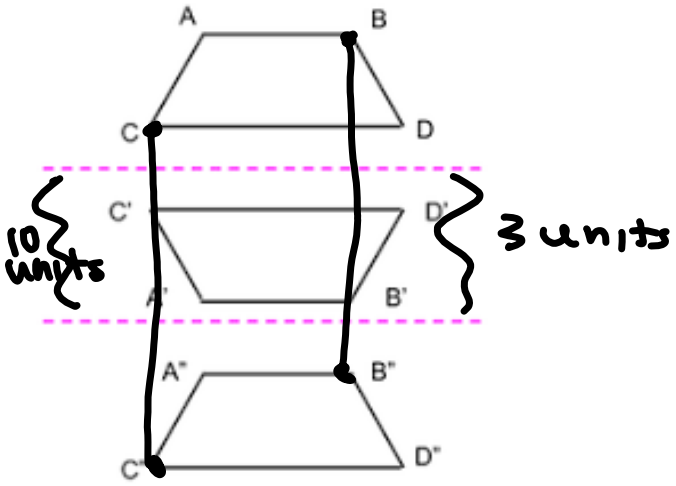
31. $\overline{LM}$

32. A

due Wednesday
9.4 #s 1-8, 10-16 evens, 19-20, 26-32 evens

Hw Tracker due Wednesday

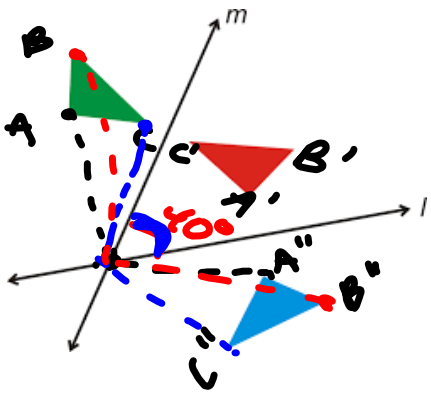
A reflection across 2 parallel lines is the same as one translation



Distance?

double the distance between || lines

A reflection across two non-parallel lines is the same as one rotation

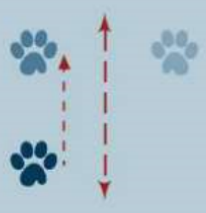


Angle?

double angle of lines of refl.

Glide Reflection... pg 514

Any composition of isometries can be represented by a reflection, translation, rotation, or glide reflection. A **glide reflection** is the composition of a translation (a glide) and a reflection across a line parallel to the direction of translation. You can map a left paw print onto a right paw print with a glide reflection.

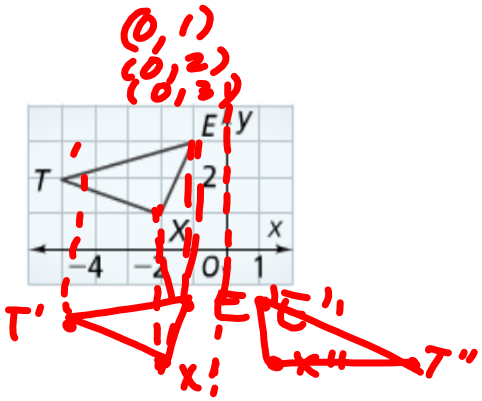


p514

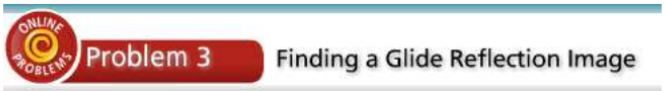
not in book

Coordinate Geometry What is $(R_{x=0} \circ T_{<0,-5>})(\triangle TEX)$?

Which do you do first?



solution...

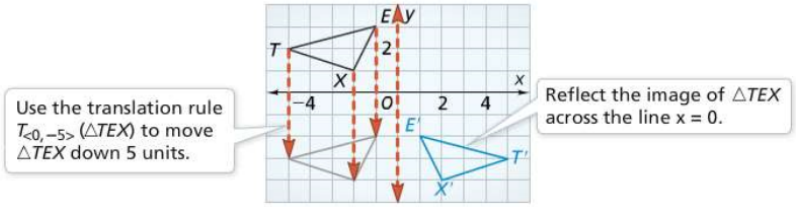


Coordinate Geometry What is $(R_{x=0} \circ T_{<0,-5>})(\triangle TEX)$?

Know
- The vertices of $\triangle TEX$
- The translation rule
- The line of reflection

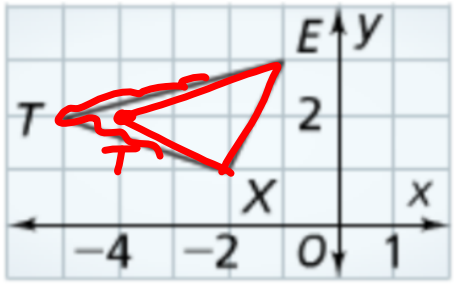
Need
The image of $\triangle TEX$ for the glide reflection

Plan
First use the translation rule to translate $\triangle TEX$. Then reflect the translation image of each vertex across the line of reflection.

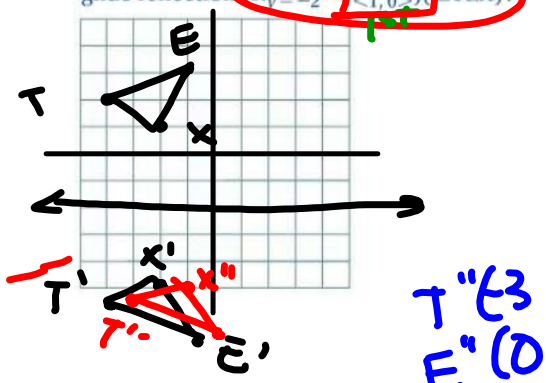


Got it pg 514

T(-4, 2), E(-1, 3), X(-2, 1)



Got It? Graph $\triangle TEX$ from Problem 3. What is the image of $\triangle TEX$ for the glide reflection $(R_{y=-2} \circ T_{\langle 1,0 \rangle})(\triangle TEX)$?



T''(3, -6)
E''(0, -7)
X''(1, -5)

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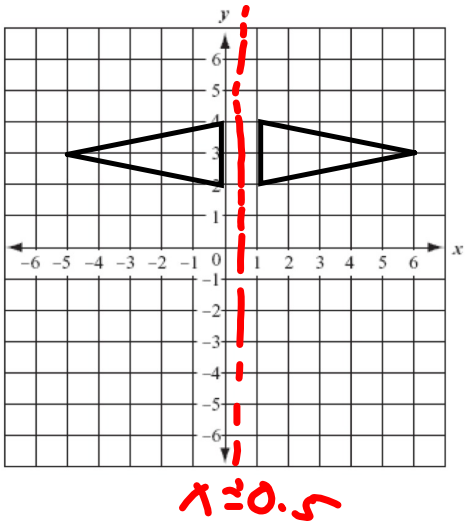
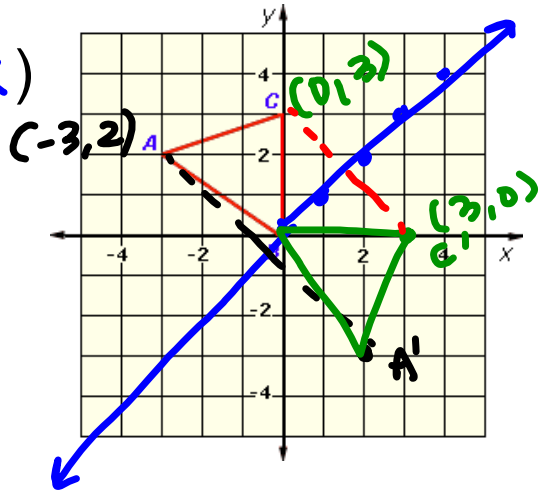
State the line of reflection



x=.5

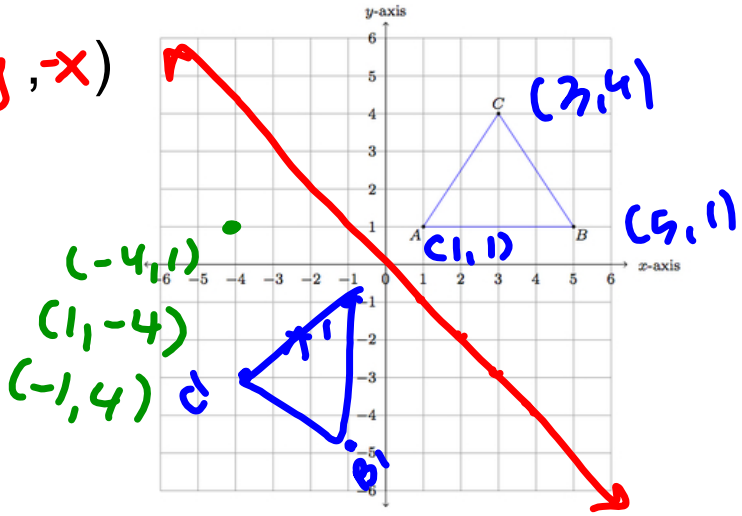
Reflecting over y = x

(x, y) --> (y , x)



Reflecting over y = -x

(x, y) --> (-y , -x)



9.4 #s 1-8, 10-16 evens 19-20, 26-32 evens

graph paper for 12,14 &16

Review...

Perform the following Transformation

$T_{<-4,\ 2>}(ABC)$