Warm Up 9/20/17

Determine whether the polygons with the given vertices are congruent. Use transformations to explain your reasoning.

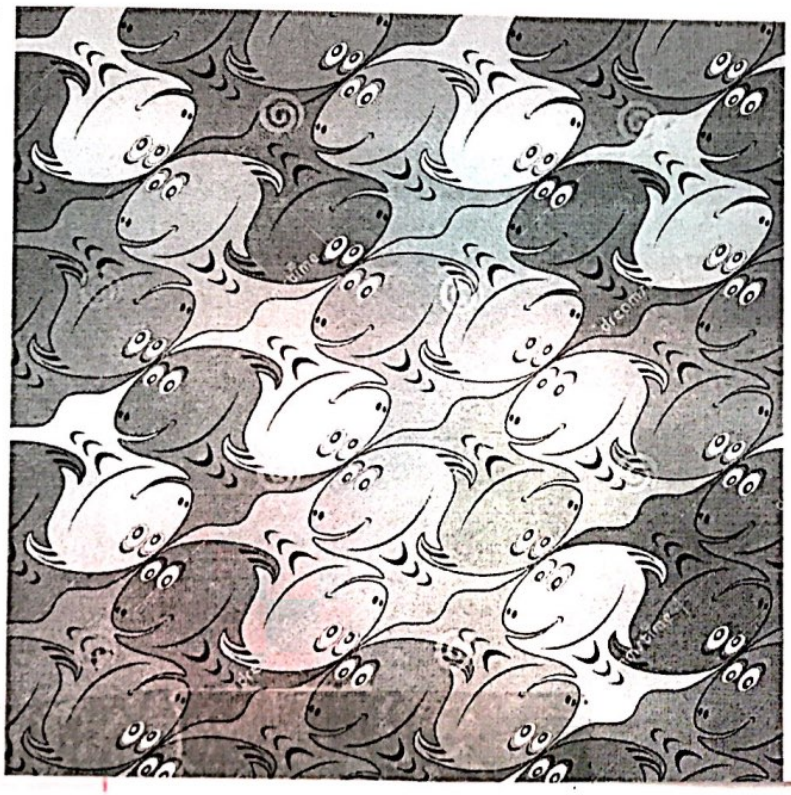
1. W(-3, 1), X(2, 1), Y(4. -4), Z(-5, -4) and C(-1, -3), D(-1, 2), E(4,4), F(4,-5)

2. J(1, 1), K(3, 2), L(4, 1) and M(6, 1), N(5, 2), P(2, 1)

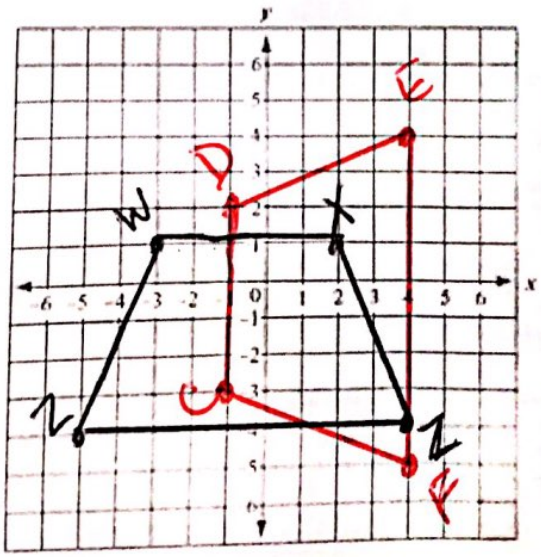
3. The pattern shown is called a tessellation.

a. What transformations did the artist use when creating this tessellation?

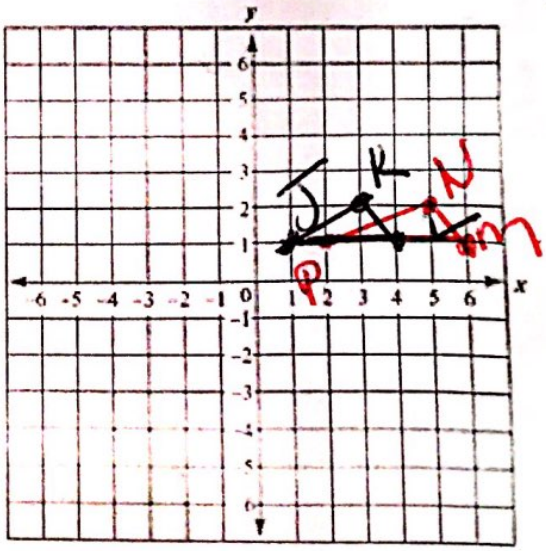
b. Are the individual figures in the tessellation congruent? Explain your reasoning.



1)

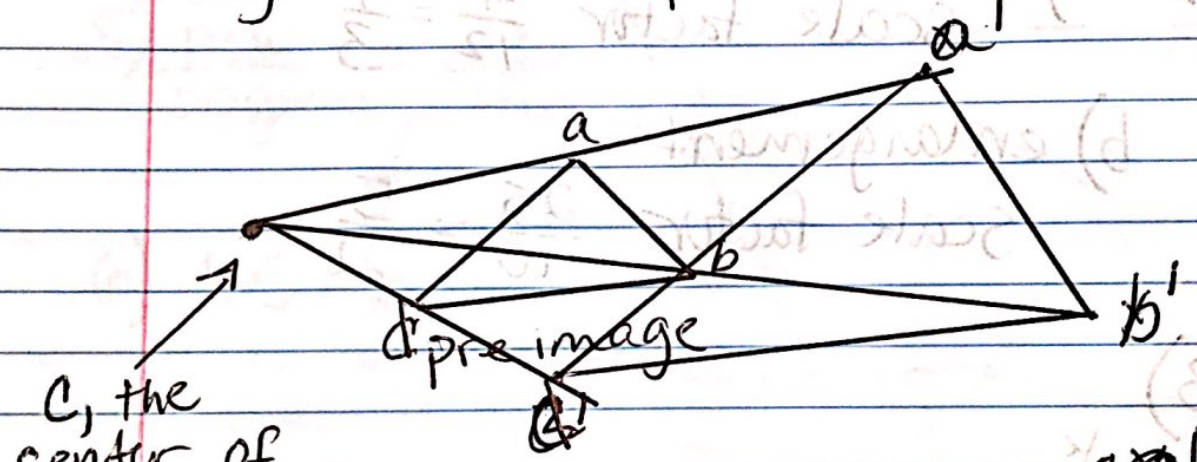


2)



4.5 Dilations

Dilation - a transformation in which a figure is enlarged or reduced with respect to a fixed point, C, called the center of dilation and a scale factor, k, which is the ratio of the lengths of the corresponding sides of the image and the preimage. Angle measure is preserved.



$$\text{scale factor} = \frac{ca'}{ca}$$

← new

↖ original

Enlargement: the scale factor is greater than 1. $k>1$

Reduction: the scale factor is less than 1 $0<k<1$

Rule for graphing with a scale factor of k $(x,y) \rightarrow (kx, ky)$

ex1) a) enlargement

Scale factor $= \frac{12}{8} = \frac{3}{2}$

b) Reduction

scale factor $= \frac{18}{30} = \frac{3}{5}$

ex2) a) reduction

scale factor $\frac{4}{12} = \frac{1}{3}$

b) enlargement

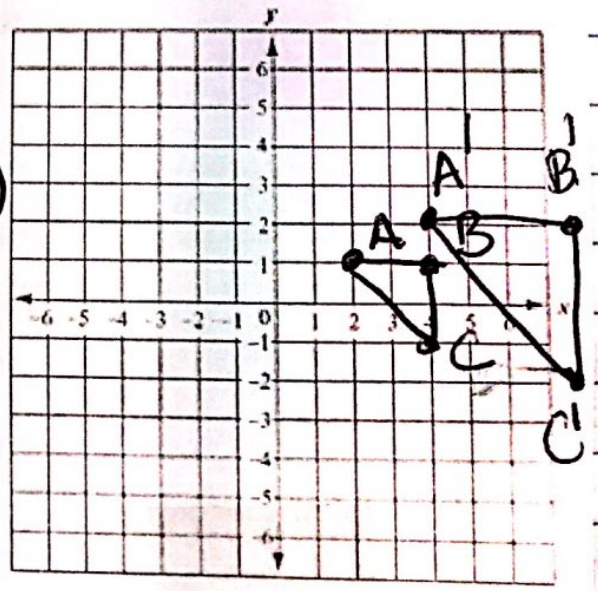
scale factor $\frac{25}{10} = \frac{5}{2}$

ex3)

A(2,1) B(4,1) C(4,-1)

scale factor of 2

A'(4,2) B'(8,2) C'(8,-2)

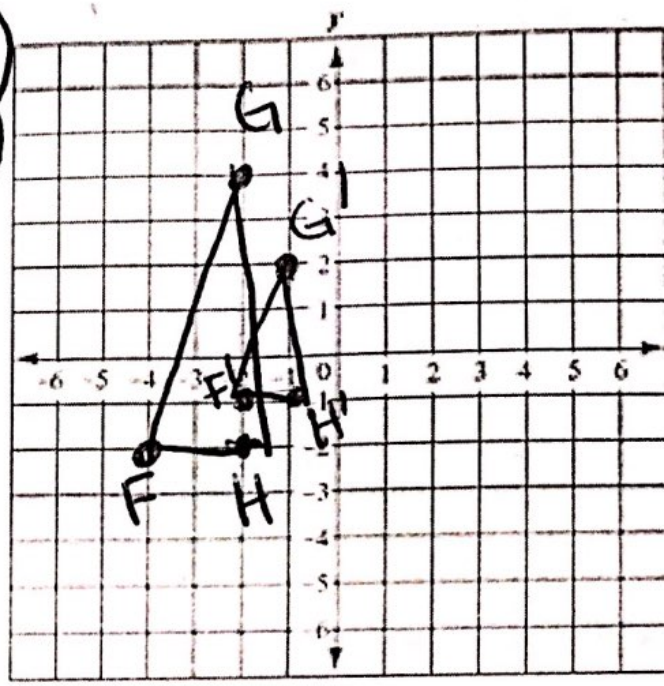


4)

$F(-4,-2)$ Scale of $F'(-2,-1)$

$G(-2,4)$ $\frac{1}{2}$ $G'(-1,2)$

$H(-2,-2)$ $H'(-1,-1)$



5) $\frac{\text{new}}{\text{original}} = \frac{1.1\text{ in}}{4\text{ in}} = \boxed{\frac{11}{40}}$

6) $1.5 \times 6 = \boxed{9\text{cm}}$