Name: Answers Date: Class:

TRANSFORMATIONS: 8.G.1-8.G.4

Label each of the following as either similar or congruent.

similar — A dilation (similar) with a scale factor of ½ and a translation (congruent) of 2 units horizontally.

congruent — A reflection (congruent) over the x axis and a rotation (congruent) of 90° clockwise.

congruent — A rotation (congruent) of 270° CCW followed by a reflection (congruent) over the x-axis.

congruent — A reflection (congruent) over the y-axis followed by a reflection (congruent) over the x-axis

*Remember: only dilations lead to similarity

For each rule below, describe the transformation or sequence of transformations that took place.

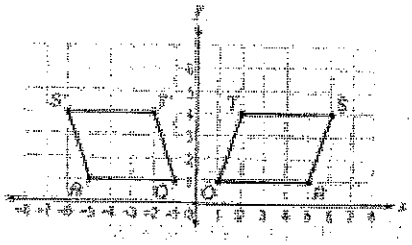
$(x,y)\rightarrow(3x,3y)$ Dilation with a scale factor of 3

$(x,y)\rightarrow(3x,3y-2)$ Dilation with a scale factor of 3 and translation 2 units down

$(x,y)\rightarrow(x+4,y-2)$ Translation 4 units right and 2 units down

$(x,y)\rightarrow(-x,y)$ Reflection over the y-axis

Parallelogram QRST is reflected over the y-axis to create parallelogram Q'R'S'T'. Use this information to answer questions 1 and 2.



1. Which angle is congruent to ∠S?

A. ∠Q' (C.) ∠S'

B. ∠R' D. ∠T'

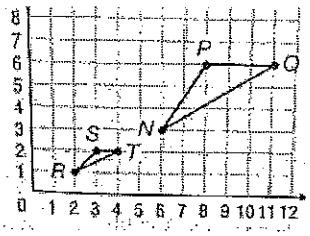
2. $\overline{QR}$ is parallel to $\overline{TS}$. Which side is parallel to $\overline{Q'R'}$?

A. $\overline{S'R'}$ C. $\overline{Q'T'}$

(B.) $\overline{S'T'}$ D. $\overline{RS}$

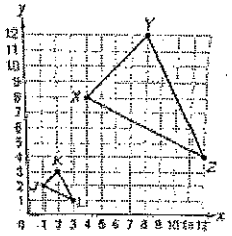
Triangle RST is the result of a dilation of ΔNPQ with the center of dilation at the origin and a scale factor of 1/3. Which of the following must be true?

(A.) ∠N is congruent to ∠R.
B. ∠N is congruent to ∠S.
C. ∠P is congruent to ∠R.
D. ∠P is congruent to ∠T.



*Remember that angles don't change, even in a dilation.

Triangle XYZ is the result of a dilation of ΔJKL with the center of dilation at the origin and a scale factor of 4. Use this to answer questions 5 and 6.



Which names a pair of corresponding, congruent angles?

A. ∠L and ∠X
B. ∠L and ∠Y
C. ∠K and ∠X
(D.) ∠K and ∠Y

Which is NOT true of the triangles in the diagram?

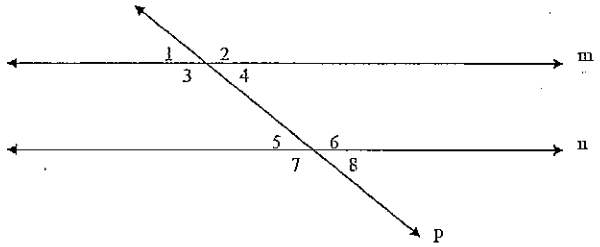
A. ΔXYZ is similar to ΔJKL because a dilated image is similar to the original figure.
B. The ratio of $\frac{JK}{XY}$ is equivalent to the ratio of $\frac{KL}{YZ}$
C. $m\angle J = m\angle X$
(D.) JL = XZ (sides aren't equal in a dilation)

SPECIAL ANGLES 8.G.5

When parallel lines are cut by a transversal, they create special angle relationships. Each relationship is either congruent (equal) or supplementary (add up to 180°). You must know the relationships and if they are equal or supplementary. Study your vocabulary!

In the picture below, lines m and n are parallel and line p is a transversal.

Supplementary Angle Examples:	Congruent Angle Examples:
∠1 and ∠2 form a straight line and are supplementary ∠1 and ∠7 are supplementary because they are same side exterior angles ∠3 and ∠5 are supplementary because they are same side interior angles	∠1 and ∠5 are congruent because they are corresponding angles ∠3 and ∠6 are congruent because they are alternate interior angles ∠2 and ∠7 are congruent because they are alternate exterior angles ∠2 and ∠3 are congruent because they are vertical angles



1. What relationship exist between angles 1 and 2?

   a. Corresponding Angles
   b. Supplementary Angles
   c. Vertical Angles
   d. Alternate Exterior Angles

2. What relationship exist between angles 2 and 3?

   a. Corresponding Angles
   b. Supplementary Angles
   c. Vertical Angles
   d. Alternate Exterior Angles

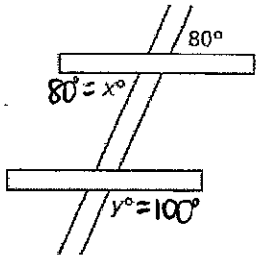
3. What relationship exist between angles 1 and 5?

   a. Corresponding Angles
   b. Supplementary Angles
   c. Vertical Angles
   d. Alternate Exterior Angles

4. What relationship exist between angles 2 and 7?

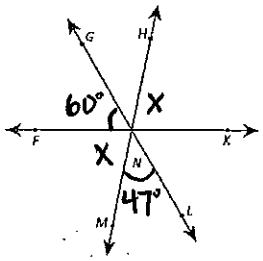
   a. Corresponding Angles
   b. Supplementary Angles
   c. Vertical Angles
   d. Alternate Exterior Angles

. The figure below shows part of a stepladder with two steps. Each step is parallel to the ground and attached to a diagonal rod.



Which conclusion is true based on the given information and angle relationships?

A. The value of x is 80 because vertical angles are congruent.
B. The value of x is 80 because adjacent angles are congruent.
C. The value of x is 100 because alternate vertical angles are supplementary.
D. The value of x is 100 because alternate exterior angles are supplementary.



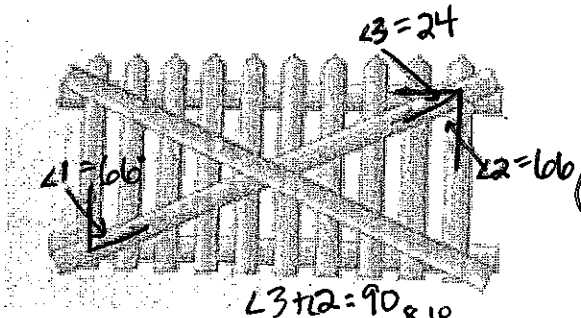
In the diagram to the left, three lines intersect at N. The measure of ∠GNF is 60°, and the measure of ∠MNL is 47°. What is the measure of ∠HNK?

$60+x+47=180$
$107+x=180$
$-107 \quad -107$
$x=73°$

$m\angle HNK = x$ (since they're vertical angles)

$m\angle HNK = 73°$

The gate for a picket fence has a cross brace as shown in the diagram below. The two horizontal braces are parallel and the measure of ∠3 is 24°. Which explanation could be used to find the measure of ∠1?



∠3+∠2=90
24+∠2=90
-24 -24
∠2=66
m∠1=m∠2
m∠1=66

A. Since ∠2 and ∠3 are complementary angles, m∠2 is 66°. ∠1 and ∠2 are alternate exterior angles, so m∠1 is 66°.

B. Since ∠2 and ∠3 are supplementary angles, m∠2 is 156°. ∠1 and ∠2 are alternate interior angles, so m∠1 is 156°.

C. Since ∠2 and ∠3 are complementary angles, m∠2 is 66°. ∠1 and ∠2 are alternate interior angles, so m∠1 is 66°.

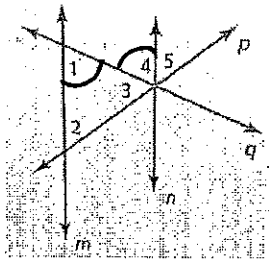
D. Since ∠2 and ∠3 are supplementary angles, m∠2 is 156°. ∠1 and ∠2 are corresponding angles, so m∠1 is 156°.

Triangles

1. **Any angles that form a straight line are supplementary and have a sum of 180°.**
2. **The interior angles of a triangle have a sum of 180°.**
3. **An exterior angle will be equal to the sum of its remote interior angles (the two furthest away).**

All of these rules are true all of the time! You can use them to solve for missing angles.

In the figure below, lines m and n are parallel. Which valid statement is part of the proof that the sum of the measures of ∠1, ∠2, and ∠3 is 180°?



A. ∠1 and ∠4 are congruent because they are alternate interior angles on the transversal q.

B. ∠1 and ∠4 are congruent because they are ~~corresponding angles~~ on the transversal q.

C. ∠2 and ∠4 are congruent because they are ~~alternate interior angles~~ on the transversal q.

D. ∠2 and ∠4 are supplementary because they are ~~alternate interior angles~~ on the transversal q.