Geometry Transformation Compositions & Congruence REVIEW

1. Name the translation image of $\triangle XYZ$ equivalent to $(R_r \circ R_t)(\triangle XYZ)$, the reflection of $\triangle XYZ$ first across line $r$, then across line $t$.

2. Which type of isometry is the equivalent of two reflections across parallel lines?
   A. glide reflection    C. translation
   B. rotation           D. reflection

3. Describe the resulting transformation that occurs after the composition of transformations $R_y \circ R_y(-X) - \triangle XY$.

4. Describe the resulting transformation that occurs after the composition of transformations $R_l \circ R_m$. 

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Name: ___________________  Class: _______________  Date: ________  ID: A
5. Find the glide reflection image of the black triangle for the composition \((R_{x=-1} \circ T_{<0,-7})\). A translation, followed by a reflection.

A.  

B.  

C.  

D.  

Use the composition of a 90° counterclockwise rotation about C, followed by a reflection across line \(l\), \((R_{l} \circ r_{(90,C)})(\triangle ABC) = \triangle DFE\), shown below.

6. Which angle has an equal measure to \(m \angle C\)?
   
   A. \(m \angle E\)  
   B. \(m \angle D\)  
   C. \(m \angle F\)  
   D. \(m \angle A\)
7. Which side has an equal measure to $\overline{CA}$?

A. $\overline{ED}$  
B. $\overline{FD}$

C. $\overline{DE}$  
D. $\overline{DF}$

Use the figures below.

8. Write a sequence of rigid motions that maps $\triangle RST$ to $\triangle DEF$.

A. $(R_{ST} \circ r_{(270^\circ, P)})(\triangle RST) = (\triangle DEF)$
B. $R_{Y-x}(\triangle RST) = (\triangle DEF)$

C. $(R_{Y-x} \circ r_{(180^\circ, P)})(\triangle RST) = (\triangle DEF)$
D. $r_{(180^\circ, P)}(\triangle RST) = (\triangle DEF)$
9. In the diagram, $\triangle ABC \cong \triangle LMN$. What is a congruence transformation that maps $\triangle ABC$ onto $\triangle LMN$?

A. $(R_{y=-x} \circ T_{0,2})(\triangle ABC) = (\triangle LMN)$
B. $(R_{y=x} \circ T_{0,-2})(\triangle ABC) = (\triangle LMN)$
C. $(r_{90^\circ,O} \circ R_{y=-x})(\triangle ABC) = (\triangle LMN)$
D. $(R_{y=-x})(\triangle ABC) = (\triangle LMN)$

10. Determine whether each image has reflectional, rotational or point symmetry. If the figure has reflectional symmetry, indicate the number of lines of symmetry. If the figure has rotational symmetry, indicate the order and degree of rotation.

A. C. B. D.
11. Justify the last two steps of the proof.

Given: $MN \cong PO$ and $MO \cong PN$
Prove: $\triangle MNO \cong \triangle PON$

![Diagram of triangles MNO and PON]

Proof:
1. $MN \cong PO$  
   1. Given
2. $MO \cong PN$  
   2. Given
3. $NO \cong ON$  
   3. ?
4. $\triangle MNO \cong \triangle PON$  
   4. ?

12. State whether $\triangle ABC$ and $\triangle AED$ are congruent. Justify your answer.

![Diagram of triangles ABC and AED]

13. Which triangles are congruent by ASA?
14. Name the theorem or postulate that lets you immediately conclude $\triangle ABD \cong \triangle CBD$.

A. SAS  
B. ASA  
C. AAS  
D. none of these

15. If $\triangle KLM \cong \triangle STU$, which of the following can you NOT conclude as being true?
   A. $\angle L \cong \angle T$  
   B. $LM \cong TU$  
   C. $\angle K \cong \angle S$  
   D. $KL \cong SU$

16. $\angle ACB \cong \ ?$

17. Given $\triangle QRS \cong \triangle TUV$, $QS = 5v + 2$, and $TV = 8v - 4$, find the length of $QS$ and $TV$.  

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Name: ______________________  
ID: A
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Answer Section

1. ΔDEF
2. C
3. a translation of 10 units up
4. a counter-clockwise rotation of 170°
5. D
6. A
7. A
8. A
9. A
10. C
11. Reflexive Property of ≅; SSS
12. yes, by either SSS or SAS
13. ΔVTU and ΔABC
14. C
15. D
16. ∠MPN
17. 12