NAME _____ CLASS _____ DATE _____

Practice Masters Level A

2.4 Building a System of Geometry Knowledge

Match each property with its definition.

_____ 1. Addition Property

_____ 2. Symmetric Property

_____ 3. Substitution Property

_____ 4. Multiplication Property

_____ 5. Division Property

_____ 6. Reflexive Property

_____ 7. Subtraction Property

_____ 8. Transitive Property

a. If $a = b$, then $ac = bc$.

b. If $a = b$, then $a - c = b - c$.

c. For all real numbers a, $a = a$.

d. If $a = b$, you may replace a with b in any true equation containing a and the resulting equation will still be true.

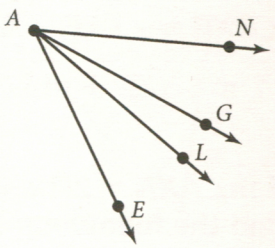
e. If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$.

f. If $a = b$, then $a + c = b + c$.

g. For all real numbers a and b, if $a = b$, then $b = a$.

h. For all real numbers a and b, if $a = b$ and $b = c$, then $a = c$.

Refer to the diagram at right, in which m∠*NAG* = m∠*EAL*. Use the Overlapping Angles Theorem to complete the following:



9. m∠*NAG* + m∠*GAL* = m∠*GAL* + _____

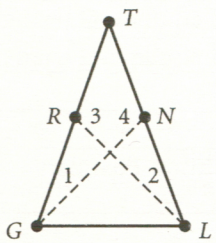
If m∠*NAG* = 24°, and m∠*NAL* = 36°, find the following:

10. m∠*GAL* _____ 11. m∠GAE _____

Complete the proof below:

Given: m∠1 = m∠2
m∠*T* + m∠3 + m∠2 = 180°
m∠*T* + m∠1 + m∠4 = 180°

Prove: m∠3 = m∠4



Statements	Reasons
m∠*T* = m∠*T*	12.
m∠1 = m∠2 m∠*T* + m∠3 + m∠2 = 180° m∠*T* + m∠1 + m∠4 = 180°	Given
m∠*T* + m∠3 + m∠2 = m∠*T* + m∠1 + m∠4	13.
m∠3 + m∠2 = m∠1 + m∠4	14.
m∠3 + m∠1 = m∠1 + m∠4	15.
m∠3 = m∠4	16.

NAME _____ CLASS _____ DATE _____

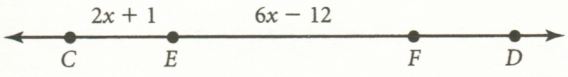
Practice Masters Level B

2.4 Building a System of Geometry Knowledge

Identify the Properties of Equality that justify the indicated steps.

Statements	Reasons
$3x + 12 = 5x$	Given
$12 = 2x$	1.
$6 = x$	2.

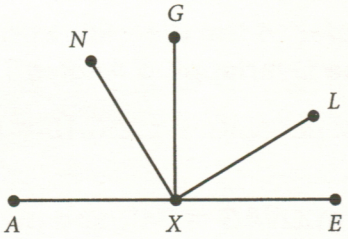
For Exercises 3-6, use the figure at the right. If $CE = FD$ and $CD = 11x–21$, find the following:



3. x _____ 4. CE _____

5. EF _____ 6. CD _____

For Exercises 7-10, use the figure at the right. $\angle NXG \cong \angle LXE$, $\angle AXN \cong \angle GXL$.



7. $m\angle NXG + m\angle GXL =$ _____

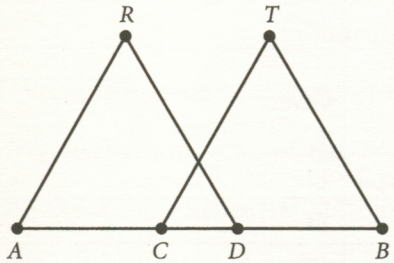
If $m\angle AXN = 2(3x + 4)$, and $m\angle GXL = 8x–9$, find the following:

8. x _____ 9. $m\angle GXL$ _____ 10. $m\angle GXN$ _____

Fill in the blanks in the following proof:

Given: $\triangle RDA$ and $\triangle CTB$ are equilateral triangles.
$RD = TC$

Prove: $AC = DB$



Statements	Reasons
11. $RD =$ ____ $=$ ____	Definition of equilateral triangle
12. $TC =$ ____ $=$ ____	Definition of equilateral triangle
$RD = TC$	Given
$AD = CB$	13.
$AC + CD = AD$ $CD + DB = CB$	Segment Addition Postulate
$AC + CD = CD + DB$	14.
$CD = CD$	15.
$AC = DB$	16.