Geometry Honors
Unit 4: Reasoning
4.2 Day 1 Proving Supplementary, Complimentary, Vertical Angles

Mathematician: _____
Period:_____

LEVEL: EMERGING

Directions: Match the word with the correct definition.

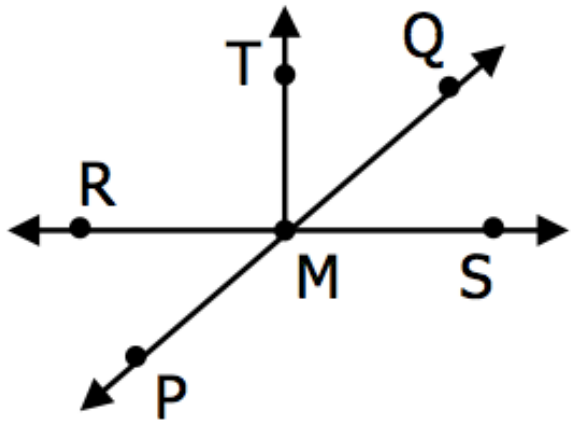
1) Complementary Angles Letter: _____	A) Two nonadjacent angles formed by two intersecting lines
2) Adjacent Angles Letter: _____	B) Two adjacent angles whose sum is 180°.
3) Supplementary Angles Letter: _____	C) Two angles whose sum is 180°.
4) Linear Pair Letter: _____	D) Two angles that share a common ray
5) Vertical Angles Letter: _____	E) Two angles whose sum is 90°.

Directions: Determine what property was used in the following examples.

6) If $\angle XYZ$ and $\angle ZYW$ are adjacent angles, then $\angle XYZ + \angle ZYW = \angle XYW$	7) If $\angle 1 = 34°$ and $\angle 2$ is complementary to it, then $\angle 2 = 56°$.	8) If $\angle A = 56°$ and $\angle H = 124°$, then $\angle A$ and $\angle H$ are supplementary.
9) If $\angle 1$ is a right angle, then $\angle 1 = 90°$.	10) If $\angle 2 + \angle 4 = 180°$, then they are supplementary.	11) If lines ABC and DBF are perpendicular, then $\angle CBF = 90°$.

LEVEL: PROFICIENT

Directions: Use the diagram to answer the following questions. Note: $\angle TMR$ is a right angle.



12) Name an angle supplementary to $\angle QMS$.

13) Name an angle complementary to $\angle QMS$.

14) Name a pair of adjacent angles.

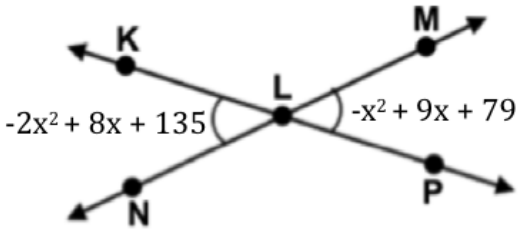
15) Name a pair of vertical angles.

16) Which angle forms a linear pair with $\angle PMR$?

LEVEL: MASTERY

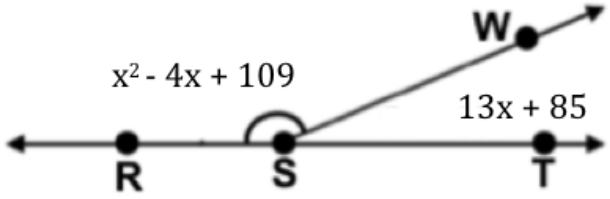
Directions: Find the measure of the indicated angles.

17) Find the measure of $\angle MLP$.



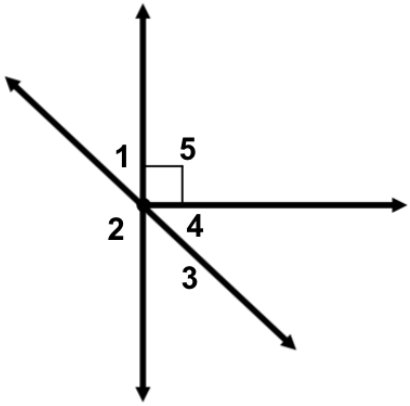
$m\angle MLP =$ _____

18) Find the measure of $\angle RSW$.



$m\angle RSW =$ _____

Directions: Use the diagram to answer the following questions.



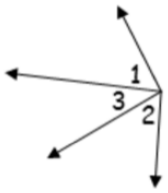
19) Identify all sets of linear pairs.

20) Identify all pairs of vertical angles.

21) Identify any pairs of angles that are supplementary to $\angle 1$.

22) Identify any pairs of angles that are complementary.

Directions: Complete the proof by placing the reasons in the correct order. (Circle A B C D E in each step). Each option is only used **once**.



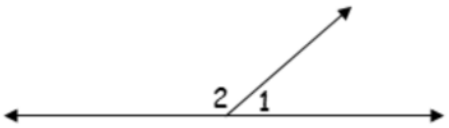
23) Given: $\angle 1$ and $\angle 3$ are complementary, $\angle 2$ and $\angle 3$ are complementary.
Prove: $\angle 1 \cong \angle 2$

Statements	Reasons
(1) $\angle 1$ and $\angle 3$ are complementary, $\angle 2$ and $\angle 3$ are complementary.	(1) Given
(2) Question a A B C D E	(2) Definition of Complementary
(3) Question b A B C D E	(3) Substitution Property of Equality
(4) Question c A B C D E	(4) Subtraction Property of Equality
(5) Question d A B C D E	(5) Definition of Congruent

A) $m\angle 1 + m\angle 3 = 90$ B) $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$ C) $m\angle 1 = m\angle 2$

D) $\angle 1 \cong \angle 2$ E) $m\angle 2 + m\angle 3 = 90$

24) Given: $\angle 1$ and $\angle 2$ form a linear pair, $m\angle 2 = 2(m\angle 1)$
Prove: $m\angle 1 = 60°$



Statements			Reasons	
(1)	Question a	A B C D E F G	(1)	Given
(2)	Question b	A B C D E F G	(2)	Definition of Linear Pair
(3)	Question c	A B C D E F G	(3)	Definition of Supplementary
(4)	Question d	A B C D E F G	(4)	Substitution Property of Equality
(5)	Question e	A B C D E F G	(5)	Distribution Property of Equality
(6)	Question f	A B C D E F G	(6)	Division Property of Equality

A) $\angle 1\ and\ \angle 2$ are supplementary B) $m\angle 1 + 2(m\angle 1) = 180$ C) $m\angle 2 = 2(m\angle 1)$

D) $m\angle 1 = 60$ E) $m\angle 1 + m\angle 2 = 180$ F) $\angle 1$ and $\angle 2$ form a linear pair G) $3(m\angle 1) = 180$

Directions: Complete the two-column proof.

25) Given: $\angle 2$ and $\angle 3$ are supplementary.
Prove: $\angle 1 \cong \angle 3$

Statements	Reasons