Geometry Honors
Unit 4: Reasoning
4.1 Day 1 Proofs and Reasoning

Mathematician: _____

Period:_____

LEVEL: EMERGING

1) Using deductive reasoning, what clues might help you deduce that your dog is hungry? Circle the correct choice.

I. He follows you around the house.
II. He whines next to his food bowl.
III. He chews on anything in sight.
IV. His tail won't stop wagging.

A) I and III
B) II and IV
C) I, II, and III
D) II only

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

2) If $2x = 6$ then $2x + 4 = 6 + 4$.	3) If $z = 2$, then $5z = 5(2)$.	4) If $AB \cong BC$ and $BC \cong CD$, then $AB \cong CD$.
5) If $\frac{x}{2} = 7$, then $x = 14$.	6) If collinear points A, B, and C are in that order, then $AB + BC = AC$.	7) If $XY + ZY = 10$ and $XY = 2$, then $2 + ZY = 10$.

LEVEL: PROFICIENT

Directions: For numbers 8 and 9, fill in the reasons that justify each step:

8)   Given: B is between A and C on a line segment.
        Prove: $AB = AC - BC$, using the segment addition postulate

Statements	Reason
B is between A and C	
AB + BC = AC	
AB = AC - BC	

9)   Given: K is between J and L. JK = 6 and KL = 10.
        Prove: JL = 16

Statements	Reason
K is between J and L	
JK = 6, KL = 10	
JL = JK+KL	
JL = 6+10	
JL = 16	

Directions: Name the property that justifies each statement.

10)

Statement	Reason
$\angle P \cong \angle Q$	Given
$\angle Q \cong \angle R$	Given
$\angle P \cong \angle R$	

11)

Statement	Reason
$x = y$	Given
$y + 4 = 3x$	Given
$x + 4 = 3x$	

12)

Statement	Reason
Point X lies on $\overline{RT}$	Given
RX + XT = RT	

13) Describe what an algebraic proof is.

14) Describe what the "givens" are in an algebraic proof.

15) What is the difference between inductive reasoning and deductive reasoning?

Directions: Give an example of each of the properties. If you need to, draw a picture to go with your description!

16) Reflexive Property of Equality

17) Symmetric Property of Equality

18) Transitive Property of Equality

Directions: Use deductive reasoning to write a two-column proof.

19) Prove: $55x - 3(9x + 12) = -64$

Statements	Reason
$55x - 3(9x + 12) = -64$	Given

20) Prove: $3(x^2 - 9) = 48$

Statements	Reason
$3(x^2 - 9) = 48$	Given