Geometry Chapter 2 Pre-Test

1.) (16 pts total, 4 pts each) (2.1 Conditional Statements) For each statement, identify both the conclusion and hypothesis, provide the converse, and assess the validity of the converse statement.

    a) If yogurt is green and smells weird, then you probably should not eat it.

    b) If you pee in the bathtub, then you have done something very wrong.

    c) If you are eating a delicious burrito, then you are eating Mexican food.

    d) If x = 5, then $x^2 = 25$

2.) (16 pts total, 4 pts each) (2.2 Biconditionals and Definitions) Each conditional statement is true. Write and consider the converse. If the converse is true, combine the statements and write them as a biconditional.

a) If you are a fan of the Boston Red Sox, then you are a fan of the 2018 World Series Champions.

b) If you are friends with Nate, then you are accustomed to disappointment.

c) If you are Jeff Bezos, then you are the richest man in the world.

d) If you own a raccoon, then you have made a poor decision.

3.) (8 pts total, 4 pts each) (2.3 Deductive Reasoning) Use the law of detachment to draw a conclusion. If not possible, write not possible.

    a) If you are a fan of Macklemore, then you have poor taste in music.

       Nate has poor taste in music.

    b) If you say you're going to bring donuts and don't bring donuts, then Hannah is going to knock you out.

       Nate said he was going to bring donuts and didn't.

4.) (8 pts total, 4 pts each) (2.3 Deductive Reasoning) Use the law of syllogism to draw conclusions from the following statements.

    a) If Nate loses his hair, then he will be sad and depressed. If Nate is sad and depressed, then he will buy a Cold Stone Creamery franchise and eat ice cream all day every day.

       Nate found two hairs on his desk.

    b) If you do well in school, then you will go to college. If you go to college, then you will be more likely to have a successful, fulfilling professional career.

       Charlie is doing well in school.

5.) (16 pts total, 8 pts each) (2.4 Reasoning in Algebra) Complete the following proofs.

a) Given: 8x + 3 = 43
   Prove: x = 5

Statement	Reasoning
1.) 8x + 3 = 43	1.)
2.) 8x = 40	2.)
3.) x = 5	3.)

b) Given: 3(2a - 5) = 45
   Prove: a = 10

Statement	Reasoning
1.) 3(2a - 5) = 45	1.)
2.) 6a - 15 = 45	2.)
3.) 6a = 60	3.)
4.) a = 10	4.)

6.) (36 pts total, 9 pts each) (2.5 Proving Angles Congruent) Complete the following proofs.

a)

VII. Given: $\overline{BD}$ bisects <EBC

Prove: <1 and <3 are supplementary
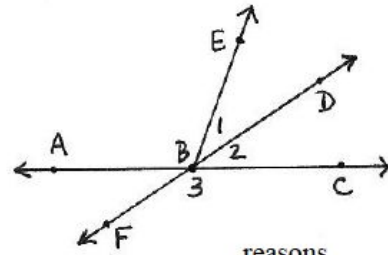
statements	reasons
1. $\overline{BD}$ bisects <EBC	1.
2. <1 ≅ <2	2.
3. <2 and <3 form a linear pair	3.
4. m<2 + m<3 = 180	4.
5. m<1 = m<2	5.
6. m<1 + m<3 = 180	6.
7. <1 and <3 are supplementary	7.

b)

IX. Given: $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$
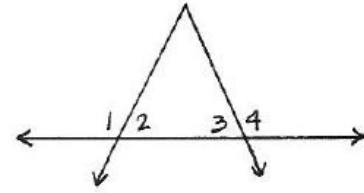
statements	reasons
1. $\angle 1$ and $\angle 2$ form a linear pair $\angle 3$ and $\angle 4$ form a linear pair	1.
2. $\angle 1$ and $\angle 2$ are supp. $\angle 4$ and $\angle 3$ are supp.	2.
3. $\angle 2 \cong \angle 3$	3.
4. $\angle 1 \cong \angle 4$	4.

c)

Given: $\overline{FR} \cong \overline{AN}$
Prove: $\overline{FA} \cong \overline{RN}$
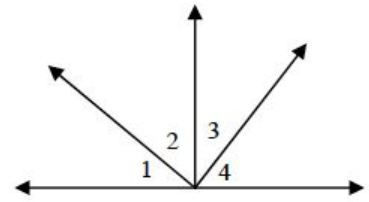

Statement	Reason

d)

Given: ∠1 and ∠2 are complementary.
∠1 ≅ ∠3
∠2 ≅ ∠4

Prove: ∠3 and ∠4 are complementary.

Statement   Reason