6-1 Logic and properties
Secondary Math II

Name:_____
Class Period:_____

Write the following of the conditional statement.

1. If you go to AFHS, then you are a caveman.

Hypothesis: _____

Conclusion: _____

Converse: _____

Inverse: _____

Contrapositive: _____

2. If you drink soda, then you will burp.

Hypothesis: _____

Conclusion: _____

Converse: _____

Inverse: _____

Contrapositive: _____

3. Rewrite the biconditional statement as a conditional statement and its converse.

   a. Two segments are congruent iff they have the same measure.

   b. You may go to the movies Friday night if and only if you clean your room.

4. Use the Law of Syllogism to write the statement that follows from the pair of statements.

   If a bird migrates in the winter then its wings will beat very fast.

   If a bird's wings beat very fast then it can carry a one pound coconut.

_____

Identify the property that justifies each statement. (*Choose from Addition, Subtraction, Reflexive, Substitution, Transitive.*)

5. If $\overline{AB} \cong \overline{PR}$ and $\overline{PR} \cong \overline{ST}$, then $\overline{AB} \cong \overline{ST}$. _____

6. If $JK = 6$ centimeters and $CD = 6$ centimeters, then $JK = CD$. _____

7. Angle ABC is congruent to angle ABC. _____

8. If $m\angle 3 = m\angle 1$, then $m\angle 3 + m\angle 2 = m\angle 1 + m\angle 2$. _____
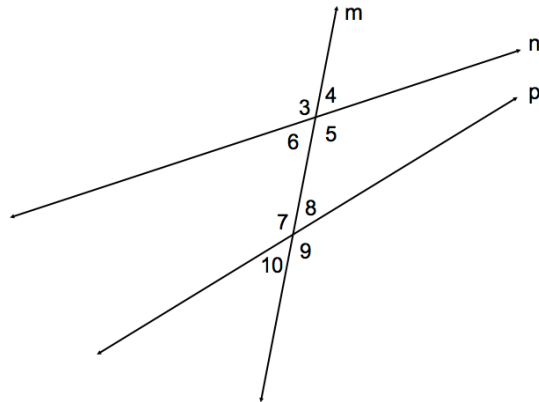
From the diagram name one of each pair of the following angles:

9. Supplementary angles _____

10. Complementary angles _____

11. Adjacent angles _____

12. Linear pair _____

13. Vertical angles _____
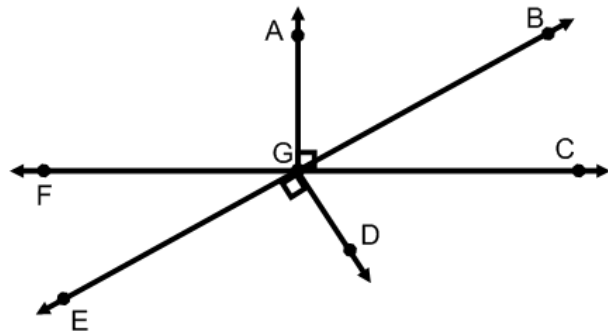
Line m is the transversal of lines n and p. Fill in the blank with *corresponding, alternate interior, alternate exterior,* or *same side interior.*

14. Ð3 and Ð7 are _____ angles.

15. Ð4 and Ð10 are _____ angles.

16. Ð5 and Ð8 are _____ angles.

17. Ð8 and Ð6 are _____ angles.

18. Ð9 and Ð5 are _____ angles.

19. Ð5 and Ð7 are _____ angles.

Use the figure at the right to answer the following questions.

20. Are Ð1 and Ð2 adjacent?

21. Are Ð1 and Ð2 a linear pair?

22. Are Ð3 and Ð4 a linear pair?
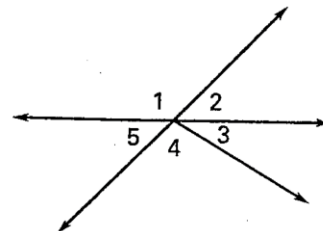
23. Are ∠2 and ∠5 vertical angles?

24. Are ∠1 and ∠4 vertical angles?

25. Are ∠3 and ∠5 vertical angles?

Assume ∠A and ∠B are complementary and ∠B and ∠C are supplementary.

26. If $m\angle A = 42°$, then $m\angle B =$ _____ and $m\angle C =$ _____.

27. If $m\angle B = 78°$, then $m\angle A =$ _____ and $m\angle C =$ _____.

28. If $m\angle A = 17°$, then $m\angle B =$ _____ and $m\angle C =$ _____.

29. If $m\angle B = 45°$, then $m\angle A =$ _____ and $m\angle C =$ _____.

∠A and ∠B are complementary. Find the $m\angle A$ and the $m\angle B$.
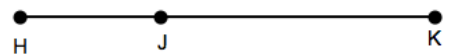
30. $m\angle A = 5x + 8$

$m\angle B = x + 4$

31. $m\angle A = 3x - 7$

$m\angle B = 11x - 1$

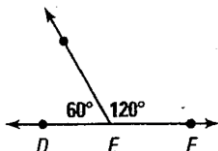∠A and ∠B are supplementary. Find the $m\angle A$ and the $m\angle B$.

32. $m\angle A = 3x$

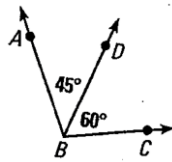$m\angle B = x + 8$

33. $m\angle A = 6x - 1$

$m\angle B = 5x - 17$

Use the figure to the right to find x by using the segment addition postulate.

34.   HJ = 2x + 4

JK = 3x + 3

KH = 22

35.   HJ = 5x -- 3

JK = 8x -- 9

KH = 131

Use the Angle Addition Postulate to find the measure of the unknown angle.

36.

$m\angle DEF =$ _____

37.

$m\angle ABC =$ _____

Answer Key:

1.
Hypothesis: you go to AFHS
Conclusion: you are a caveman.
Converse: If you are a caveman, then you go to AFHS.
Inverse: If you don't go to AFHS, then you are not a caveman.
Contrapositive: If you are not a caveman, then you don't go to AFHS.
3a.
If two segments are congruent then they have the same measure.
Two segments have the same measure then they are congruent.
5. Transitive
7. Reflexive
9. $\angle EGD$ and $\angle DGB$ is one. Find another
11. $\angle DGE$ and $\angle EGF$ is one. Find another
13. $\angle FGE$ and $\angle BGC$
15. Alternate Exterior
17. Alternate interior
19. Alternate interior
21. yes
23. yes
25. no
27. $m\angle A = 12°$ and $m\angle C = 102°$.
29. $m\angle A = 45°$ and $m\angle C = 135°$.
31. $m\angle A = 14°, \ m\angle B = 76°$
33. $m\angle A = 107°, \ m\angle B = 73°$
35. x=11
37. $105°$