

Name:

Date:

Period:

HW #2-10

Complete the following questions. Do not submit online. Check answers on the classroom website.

1. **VOCAB:** Write the definitions for each of the following terms (will be a matching term with def on test):
 - a. Conjecture
 - b. Inductive Reasoning
 - c. Deductive Reasoning
 - d. Hypothesis
 - e. Conclusion
 - f. Conditional Statement
 - g. Biconditional Statement
 - h. Counterexample
 - i. Postulate
 - j. Theorem

2. Write the converse, inverse, and contrapositive of the following statement.

Conditional: "If you are not an only child, then you have a sibling."

3. Write the converse, inverse, and contrapositive of the following statement.

Conditional: "If it is Valentine's Day, then it is February."

4. Review #2 and #3. *Only one of them can be written as a biconditional statement.* Why? Briefly explain, then write the biconditional for that statement.

5. Which two statements are always logically equivalent?

_____ and _____

_____ and _____

6. Determine if each conditional is true. If not, provide a counterexample.

a. If two angles are adjacent, then they have a common ray.

b. If you multiply two irrational numbers, the product is irrational.

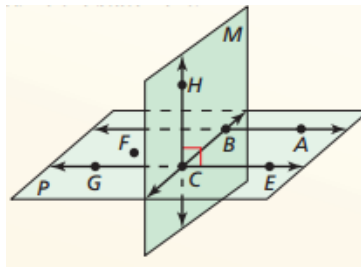
7. Use the diagram at the right to determine whether you can assume the statement. (diagram on pg. 117 of your textbook, #9-12, if this looks like a “black blob” when it goes through printing ☺)

a. Points A, B, C, and E are coplanar

b. Points F, B, and G are collinear

c. $\overrightarrow{HC} \perp \overrightarrow{GE}$

d. $\overrightarrow{AB} \parallel \overrightarrow{GE}$



8. Solve the equation. Justify each step.

$$5x + 2(2x - 23) = -154$$

9. Name the property that the statement illustrates.

a. IF $LM = RS$ and $RS = 25$, then $LM = 25$

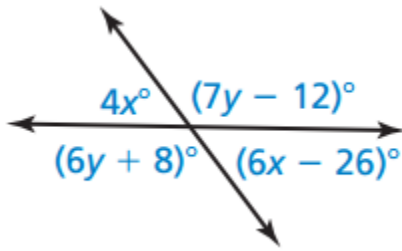
b. $AM = AM$

c. If $\angle DEF \cong \angle JKL$, then $\angle JKL \cong \angle DEF$

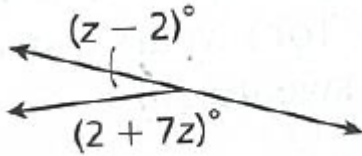
d. $\angle C \cong \angle C$

e. $MN = NM$

10. Find the values of x and y .



11. Find the value of the variable.



12. Determine the conclusion you can make using the Law of Detachment, if possible. If not possible, briefly explain why.

If it is colder than 50°F , Tom wears a sweater. It is 46°F today.

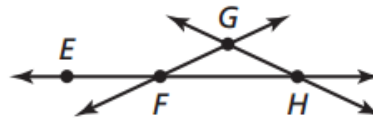
13. Determine the conclusion you can make using the Law of Syllogism, if possible. If not possible, briefly explain why.

If a figure is a square, then it is a quadrilateral. If a figure is a quadrilateral, then it is a polygon.

14. Write a two-column proof (on the test you will either write the statement given the reason or write a reason given the statement, but for now challenge yourself and write the entire proof! 😊)

Given: $\angle GFH \cong \angle GHF$

Prove: $\angle EFG$ and $\angle GHF$ are supplementary



15. Write a two-column proof (on the test you will either write the statement given the reason or write a reason given the statement, but for now challenge yourself and write the entire proof! 😊)

Given: $\overline{AB} \cong \overline{FG}$

$\overleftrightarrow{BF}$ bisects $\overline{AC}$ and $\overline{DG}$

Prove: $\overline{BC} \cong \overline{DF}$

