1.05 Toolbox

Vocabulary Review

Deductive reasoning- process of drawing _____ conclusions from given statements	
Informal proofs- _____ arguments that are used to make a definite statement in geometry	
Counterexample- an example that proves that a statement is _____	
Validity- if a statement will be true in _____ cases; if you find a counterexample to dispute the statement, then the statement is _____ valid	
Logically equivalent- statements that have the _____ meaning and are both true or both false.	

Conditional Statements

Conditional statement- an "*if, then*" statement that states if _____ event occurs, then the other will occur Example: *If* it is an orange, *then* it is a fruit.	
hypothesis- the part of the conditional following the word _____ Example: it is an orange	
conclusion- the part of the conditional following the word _____ Example: it is a fruit	

Converse, Inverse, and Contrapositive

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***Original conditional statement for examples**:* If it is an orange, then it is a fruit.	
Converse- the _____ order; interchanges the hypothesis with the conclusion Example: If it is a fruit, then it is an orange.	
Inverse- same order with _____ parts negated; write the opposite of the hypothesis and conclusion Example: If it is *not* an orange, then it is *not* a fruit.	
Contrapositive- the opposite order AND _____ parts negated; logically equivalent to the original statement Example: If it is *not* a fruit, then it is *not* an orange.	

Biconditional Statements

***Original conditional statement for example**:* If it is an orange, then it is a fruit.	
Biconditional statement- an _____ statement that states that both events are dependent on each other occurring; can be abbreviated "*iff*" Example: It is an orange *if and only if* it is a fruit. → Note: _____ definitions can be written as biconditionals. For example: A triangle is an equilateral triangle if and only if all three sides are equal in length.	

Angle Relationships

Name the angle pairs for each angle relationship below:

Parallel Lines cut by a Transversal
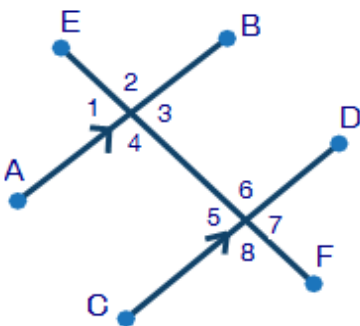
Video(click here):107-video2	Video(click here): 107-video3
Vertical Angles: Angles _____ and _____ Angles _____ and _____ Angles _____ and _____ Angles _____ and _____ These angles are _____.	**Alternate Exterior Angles:** Angles _____ and _____ Angles _____ and _____ These angles are _____.
Video(click here): 107-video4	Video(click here): 107-video5
Same-side Interior Angles: Angles _____ and _____ Angles _____ and _____ These angles are _____.	**Same-side Exterior Angles**: Angles _____ and _____ Angles _____ and _____ These angles are _____.
Video(click here): 107-video6	Video(click here): 107-video7
Alternate Interior Angles: Angles _____ and _____ Angles _____ and _____ These angles are _____.	**Corresponding Angles**: Angles _____ and _____ Angles _____ and _____ Angles _____ and _____ Angles _____ and _____ These angles are _____.

Practice

Question	Practice Explanation Videos:

Which statement is logically equivalent to the following conditional statement?
"The number 8 is an even number."
 	
   a. If it is an even number, then the number is 8.
   b. If it is not an even number, then the number is not 8.
   c. If the number is not 8, then it is not an even number.
	Solution(click here): 105-video5

Which is a counterexample of the following conditional statement:
 	
"*If a number is divisible by two, then it is odd.*"
 	
   a. 3
   b. 7
   c. 12
	Solution(click here): 105-video6

The following conditional statement is given: "If two angles form a linear pair, then the angles are supplementary" Part A: Explain how to change a statement into the converse and write the converse of the given conditional statement. Part B: Is the converse of the conditional statement valid? Give a counterexample to the converse to dispute the statement. Justify your point of view.	**Solution(click here): 105-video7**