Geometry
Chapter 2 Review Homework

Name ___Key___

1. Find the next two terms in each pattern:

   a) Tue, Fri, Mon, Thu, …

   b) $1.01, $10.01, $100.01, …

1a) _Sunday, Wednesday_

1b) $1,000.01 ; $10,000.01

2. Complete the conjecture: $1+3+5+7 = 16$ The sum of 4 odd numbers is a(n) _even_ number.
$1+1+1+1 = 4$ $3+5+7+9 = 24$

3. Determine whether the conjecture is true or false. If the statement is false, give a counterexample:

$\frac{2}{2} = 1$ $\frac{4}{2} = 2$ $\frac{6}{2} = 3$ "The quotient of two even numbers is always even."

False. Counterexample: $\frac{2}{2} = 1 \checkmark$ odd

4. Consider the following statements. Determine if each statement is true or false. If false, provide a counterexample.

   A) "If 2 angles are congruent, then they are vertical angles."

   False. ∠30, ∠30
   ≅, but not V.A.

   B) "If 2 angles form a linear pair, then they are supplementary."

   TRUE

   A) Is the converse TRUE/FALSE? Why?
   If 2∠s are V.A. then they are ≅

   B) Is the converse TRUE/FALSE? Why?
   If 2∠s are supp, then they form a linear pair.
   150, 30 } supp. but do not form a L.P.

5. Consider the statement: "Right angles are always congruent to one another."

   a) Rewrite the sentence as a conditional. Then circle the hypothesis and underline the conclusion

   If 2 ∠'s are right ∠s, then they are ≅ to each other

6. Consider the conditional statement: "If two angles form a linear pair, then the angles are supplementary." T
   Write the converse, inverse, and contrapositive of this true statement. Find the truth value of each.

   a) Converse: If 2 ∠s are supp, then they form a linear pair
   True / **False**

   b) Inverse: If 2 ∠s do not form a linear pair, then they are not supp.
   True / **False**

   c) Contrapositive: If 2 ∠s are not supp, then they do not form a linear pair.
   True / False

   d) Biconditional: Two angles form a linear pair iff the ∠'s are supp.
   True / **False**

   ★ The conditional and converse must both be true in order for the biconditional to be true

7. Determine if the conjecture is valid by the Law of Syllogism: 7) Valid/Invalid (circle one)

   Given: If your parents are upset, they will not let you borrow the car. $U \to B$ $O \to u$
                   If you do not obey your curfew, your parents will be upset. $O \to u$ $u \to B$
                                                                                             $\therefore O \to B$

   Conclusion: If you do not obey your curfew, your parents will not let you borrow the car.

   Correction if invalid: _____ N/A _____

8. Draw a conclusion based on all three of the following given statements

   Given: If Susan gets a raise, then she will move into her own apartment. $R \to A$
                  If Susan has the top sales numbers this month, then she will get a raise. $S \to R$
                  Susan has the top sales numbers this month.

                                                                               so
   Conclusion: ___ Susan will move into her own apartment. ___ $S \to R$
                                                                    $R \to A$

9. Identify the property that justifies each statement:

   a) $\angle A \cong \angle A$ a) _Reflexive_

   b)   IF $\overline{AB} \cong \overline{CD}$ and $\overline{CD} \cong \overline{EF}$, then $\overline{AB} \cong \overline{EF}$ b) _Transitive_

   c)   IF $\overline{QU} \cong \overline{IZ}$, then $\overline{IZ} \cong \overline{QU}$ c) _Symmetric_

   d)   If $\angle G \cong \angle E$ and $\angle G$ is supplementary to $\angle O$,   d) _Substitution_
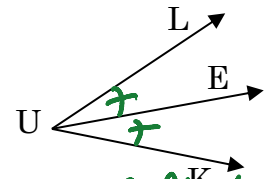   then $\angle E$ is supplementary to $\angle O$.

Fill in the conclusion using the diagram. Then provide a reason using a definition, theorem or postulate.

12. Given: $\overrightarrow{UE}$ bisects $\angle LUK$

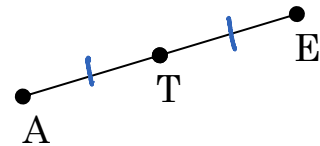   Conclusion: ___ $\angle LUE \cong \angle EUK$ ___

    Reason: __ If a ray bisects an $\angle$, then it ÷ the $\angle$ into 2 $\cong$ $\angle$s. __

13. Given: $\overline{AT} \cong \overline{TE}$

    Conclusion: __ T is midpt of $\overline{AE}$ __

    Reason: __ If a pt. ÷ a segment into 2 $\cong$ segs, then it is the midpt of the segment __

14. Given: (○ $\angle G$ and $\angle E$) are supplementary $2\angle s$ — same $\angle$.
           (○ $\angle E$ and $\angle O$) are supplementary

    Conclusion: ___ $\angle G \cong \angle O$ ___

    Reason: __ If 2 $\angle$s are supp to the same $\angle$, then the 2 $\angle$s are $\cong$. __