Name: Key Date: _____

2.3 – 2.8 Review

2.3 – Conditional Statements

For #6 and 7, identify the hypothesis and conclusion of each conditional statement.

1) If $4x - 6 = 10$, then $x = 4$.

2) An angle with a measure more than 90 is an obtuse angle.

3) Laura is waiting to board an airplane. Over the speakers she hears a flight attendant say, "If you are seated in rows 10 to 20, you may now board." What are the inverse, converse, and the contrapositive of this statement?

Converse: If you board now, then you are seated in rows 10 to 20.

Inverse: If you are not seated in rows 10 to 20, then you may not board.

Contrapositive: If you may not board, then you are not seated in rows 10 to 20.

2.5 – Postulates

For #11-13, determine whether each statement is always, sometimes, or never true.

4) Three collinear points determine a plane.

Never

5) Two points A and B determine a line.

Always

6) A plane contains at least three lines.

Sometimes

2.6 – Algebraic Proofs

Know the following properties:

- Addition Property
- Subtraction Property
- Multiplication Property
- Division Property
- Reflexive Property
- Symmetric Property
- Transitive Property
- Distributive Property
- Substitution Property

For #14-23, identify the property.

7) If a = b, then a – c = b – c. subtraction

8) If a = b and c ≠ 0, then $\frac{a}{c} = \frac{b}{c}$. Division

9) If a = b and b = a. Symmetric

10) If a = b, then a may be replaced by b in any equation or expression. Substitution

11) If A, B, and C are collinear, then point B is between A and C if and only if AB + BC = AC. Seg. Add.

12) If a = b, then a + c = b + c. Addition

13) If a = b, then a · c = b · c. Multiplication

14) a = a Reflexive

15) If a = b and b = c, then a = c. Transitive

16) a (b + c) = ab + ac. Distributive

17) Write a two-column proof for the following conjecture.

Given: $\frac{12x-8}{4} = 4$

Prove: $x = 2$

S	R
① $\frac{12x-8}{4} = 4$	① Given
② $12x - 8 = 16$	② Multiplication
③ $12x = 24$	③ Addition
④ $x = 2$	④ Division

2.7 – Proving Segment Relationships

- Know the Segment Addition Postulate and how to solve proofs using this postulate.

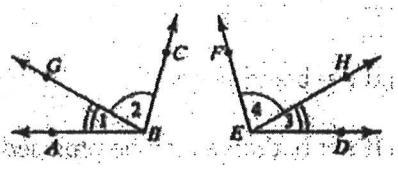
2.8 – Proving Angle Relationships

- Know the Angle Addition Postulate
- Know the Supplement Theorem
- Know the Complement Theorem
- Know the Congruent Supplements Theorem
- Know the Congruent Complements Theorem
- Know the Vertical Angles Theorem
- Know the Right Angles Theorem

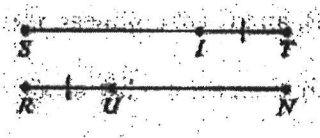
Sample Proof Questions for Sections 2.7 and 2.8

Complete the following proofs.

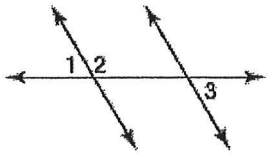
25) Given: $m\angle 1 = m\angle 3$; $m\angle 2 = m\angle 4$.
Prove: $m\angle ABC = m\angle DEF$



26) Given: $ST = RN$; $IT = RU$.
Prove: $SI = UN$



27) Given: $\angle 1$ and $\angle 2$ form a linear pair.
$\angle 2$ and $\angle 3$ are supplementary.
Prove: $\angle 1 \cong \angle 3$



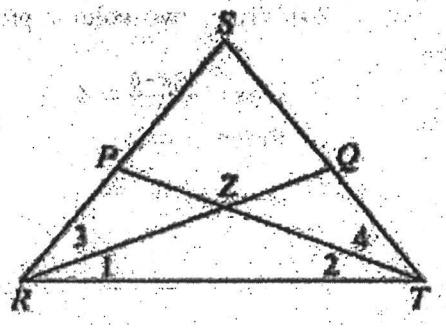
For #28-31, refer to the diagram on the right.

28) Given: $m\angle 1 = m\angle 2$; $m\angle 3 = m\angle 4$.
Prove: $m\angle SRT = m\angle STR$

29) Given: RP = TQ , PS = QS.
Prove: RS = TS

30) Given: RQ = TP , ZQ = ZP
Prove: RZ = TZ

31) Given: $m\angle SRT = m\angle STR$; $m\angle 3 = m\angle 4$
Prove: $m\angle 1 = m\angle 2$



25.

S	R
① $m\angle 1 = m\angle 3$ $m\angle 2 = m\angle 4$	① Given
② $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	② Addition
③ $m\angle 1 + m\angle 2 = \angle ABC$ $m\angle 3 + m\angle 4 = \angle DEF$	③ Angle Add.
④ $\angle ABC = \angle DEF$	④ Substitution

26.

S	R
① $ST = RN$	① Given
② $ST = SI + IT$ $RN = RU + UN$	② Seg. Add.
③ $SI + IT = RU + UN$	③ Subst.
④ $IT = RU$	④ Given
⑤ $SI = UN$	⑤ Subtraction

27.

S	R
① $\angle 1$ & $\angle 2$ form a linear pair	① Given
② $\angle 1 + \angle 2 = 180$	② def of linear pair
③ $\angle 2$ & $\angle 3$ are supp	③ Given
④ $\angle 2 + \angle 3 = 180$	④ def of supp $\angle$s
⑤ $\angle 1 + \angle 2 = \angle 2 + \angle 3$	⑤ Subst.
⑥ $\angle 2 \cong \angle 2$	⑥ Reflex.
⑦ $\angle 1 \cong \angle 3$	⑦ Subtr.