Unit 2 Proof Packet
Properties, Theorems, Postulates and Definitions Used in Proofs

PROPERTIES OF EQUALITY:

1. **Addition Property:** If a = b and c = d, then a + c = b + d

2. **Subtraction Property:** If a = b and c = d, then a – c = b - d

3. **Multiplication Property:** If a = b, then ca = cb

4. **Division Property:** If a = b and c ≠ 0, the a/c = b/c

5. **Substitution Property:** If a = b, then either a or b may be substituted for the other in any Equation (or Inequality)

6. **Reflexive Property:** a = a

7. **Symmetric Property:** If a = b, then b= a

8. **Transitive Property:** If a= b and b= c, then a = c

PROPERTIES OF CONGRUENCE: (Same as above, but with shapes, so we use congruent!)

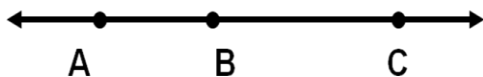1. **Reflexive Property:** DE ≅ DE   ∠D ≅ ∠D

2. **Symmetric Property:** If DE ≅ FG, then FG ≅ DE.   If ∠D ≅ ∠E, the   ∠E ≅∠D

3. **Transitive Property:** If DE ≅ FG and FG ≅ JK, then DE ≅ JK
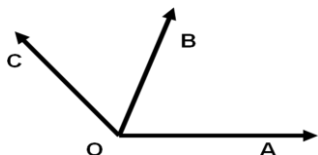   If ∠D ≅ ∠E and   ∠E ≅ ∠F, then ∠D ≅ ∠F

Other
1. **Distributive Property:** a(b + c) = ab + ac
2. **Combining Like Terms:** 2x + 3x = 5x

POSTULATES:

1. **Segment Addition Postulate:** If B is between A and C, then AB + BC = AC

2. **Angle Addition Postulate:** If B lies in the interior of ∠ AOC, then
                m∠AOB + m ∠BOC = m ∠AOC

Unit 2 Proof Packet
Properties, Theorems, Postulates and Definitions Used in Proofs

THEOREMS:

1.) Midpoint Theorem:

Note: We have defined a *midpoint*, which differs from the *Midpoint Theorem*.

2.) Angle Bisector Theorem:

Note: We have defined an *Angle Bisector*, which differs from the *Angle Bisector Theorem.*

3.) Vertical Angle Theorem:

4.) Theorem 2-4: If two lines are perpendicular, then they form _____, _____ angles.

5.) Theorem 2-5: If two lines form congruent, adjacent angles, then the lines are _____. This theorem is the converse of _____.

6.) Theorem 2-6: If the exterior sides of two adjacent angles are _____, then the angles are _____.

7.) Theorem 2-7: If two angles are _____ of congruent angles (or the same angle), then the two angles are _____.

Unit 2 Proof Packet
Properties, Theorems, Postulates and Definitions Used in Proofs

DEFINITIONS: Examples:

1.) Definition of Complementary Angles:

2.) Definition of Supplementary Angles:

3.) Definition of a Right Angle:

4.) Definition of Perpendicular Lines:

5.) Definition of a Midpoint:

6.) Definition of a Segment Bisector:

7.) Definition of an Angle Bisector: