Geometry: A Complete Course

(with Trigonometry)

Module C - Course Notes

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VideoText *Interactive*

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COURSE NOTE 141

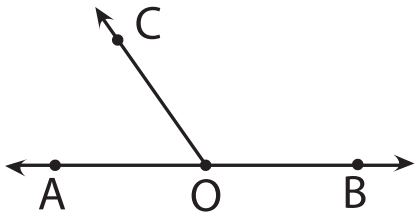
THEOREM 10

1) "If the exterior sides of two adjacent angles are opposite rays, then the two angles are supplementary."

3) Given: $\angle AOC$ and $\angle COB$ are adjacent angles with exterior sides that are opposite rays.

4) Prove: $\angle AOC$ and $\angle COB$ are supplementary

2)



5) Analysis: Definition of a Straight Angle, Postulate 7 (Protractor)

6) **STATEMENT**	**REASON**
1. $\angle AOC$ and $\angle COB$ are adjacent angles with exterior sides that are opposite rays	1. Given
2. $\overrightarrow{OC}$ lies between $\overrightarrow{OA}$ and $\overrightarrow{OB}$	2. Definition of Adjacent Angles
3. $m\angle AOC + m\angle COB = m\angle AOB$	3. Postulate 7 (Protractor) - Angle-Addition Assumption
4. $\angle AOB$ is a straight angle	4. Definition of a Straight Angle
5. $m\angle AOB = 180$	5. Definition of a Straight Angle
6. $m\angle AOC + m\angle COB = 180$	6. Substitution
7. $\angle AOC$ and $\angle COB$ are supplementary	7. Definition of Supplementary Angles (Q.E.D.)

COURSE NOTE 145

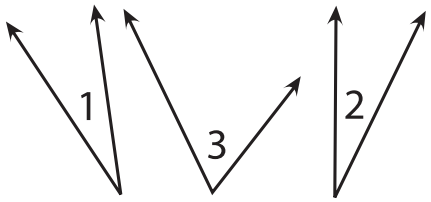
THEOREM 13

1) "If two angles are complementary to the same angle or congruent angles, then they are congruent to each other."

3) Given: $\angle 1$ is complementary to $\angle 3$
$\angle 2$ is complementary to $\angle 3$

4) Prove: $\angle 1 \cong \angle 2$

2)



5) Analysis: Definition of Complementary Angles, Substitution

6) **STATEMENT**	**REASON**
1. $\angle 1$ is complementary to $\angle 3$	1. Given
2. $m\angle 1 + m\angle 3 = 90$	2. Definition of Complementary Angles
3. $\angle 2$ is complementary to $\angle 3$	3. Given
4. $m\angle 2 + m\angle 3 = 90$	4. Definition of Complementary Angles
5. $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$	5. Substitution
6. $m\angle 1 = m\angle 2$	6. Addition of Equality
7. $\angle 1 \cong \angle 2$	7. Definition of Congruent Angles
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