Lesson Title 2.4 Algebraic Reasoning Notes HGEO **Date** _____

Task 1: Solving an Equation in Algebra

The supplement of an angle is 36 less than twice the supplement of the complement of the angle.

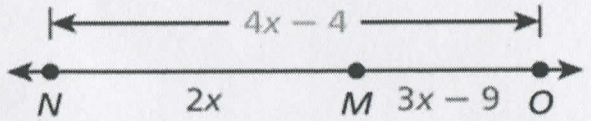
a) *Write the statement above in an algebraic equation.*

$180 - x = 2(180-(90-x)) - 36$

b) *Find the measure of the supplement through a two column proof. Statements and Reasons should be numbered.*

1. $180 - x = 2(180 - (90 - x)) - 36$	1. Given
2. $180 - x = 2(180 - 90 + x) - 36$	2. Distributive Property
3. $180 - x = 2(90 + x) - 36$	3. CLT/simplify
4. $180 - x = 180 + 2x - 36$	4. Distributive Property
5. $180 - x = 144 + 2x$	5. CLT/simplify
6. $180 = 144 + 3x$	6. Add. POE
7. $36 = 3x$	7. Subtraction POE
8. $12 = x$	8. Division POE

Task 2: Solving an Equation in Geometry.



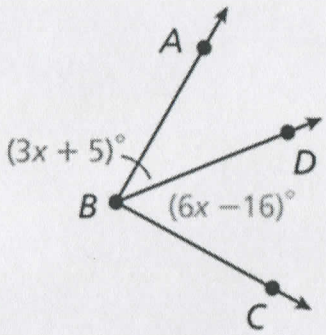
Fill the reasons of the two-column proof.

1. $NO = NM + MO$	1. Seg. Add. Post.
2. $4x - 4 = 2x + 3x - 9$	2. Substitution POE
3. $4x - 4 = 5x - 9$	3. Simplify/CLT
4. $-4 = x - 9$	4. Subtraction POE
5. $5 = x$	5. Addition POE

Task 3: Solving an Equation in Geometry.

Write a two-column proof for the diagram provided.

Statements	Reasons
1. $m\angle ABC = m\angle ABD + m\angle DBC$	1. ∡ Add. Post.
2. $8x^\circ = (3x+5)^\circ + (6x-16)^\circ$	2. Substitution POE
3. $8x = 9x - 11$	3. Simplify/CLT
4. $-x = -11$	4. Subtraction POE
5. $x = 11$	5. Multiplication POE



$m\angle ABC = 8x^\circ$

Still need help with: