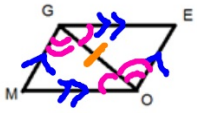
8. Given: GEOM is a parallelogram
Prove: GE ≅ OM, MG ≅ EO



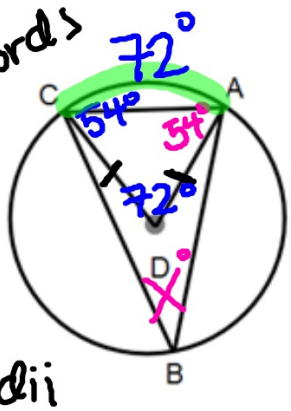
Statements	Reasons
1. GEOM is a parallelogram	a. Given
2. $GM \parallel EO, GE \parallel MO$	b. def. of parallelog.
3. $\angle EGO \cong \angle GOM, \angle MGO \cong \angle GOE$	e. alt. int. ≅
4. $GO \cong GO$	h. Reflexive
5. $\Delta GEO \cong \Delta OMG$	m. ASA
6. GE ≅ OM, MG ≅ EO	p. CPCTC

Use the following reasons to complete the proof. There are more reasons than needed.

a. Given
b. Definition of parallelogram.
c. When two parallel lines are intersected by a transversal, same side interior angles are congruent.
d. When two parallel lines are intersected by a transversal, same side interior angles are ~~supplementary~~.
e. When two parallel lines are intersected by a transversal, alternate interior angles are congruent.
f. When two parallel lines are intersected by a transversal, alternate interior angles are ~~supplementary~~.
g. Vertical Angles are congruent.
h. Shared Side. Reflexive
i. Transitive Property of Congruence
~~j. SSS~~
~~k. AAA~~
~~l. SAS~~
m. ASA
n. AAS
~~o. AA~~
p. ~~Congruent~~ Corresponding parts of congruent triangles are congruent.

a)

Find m< ABC if the m<CAD = 54 degrees.



$\overline{DC}$, $\overline{BA}$, $\overline{CA}$ } Chords

$\overline{CD}$, $\overline{AD}$ } Radii

$\triangle ADC$: Isosceles

$54 + 54 + \angle D = 180$

$108 + \angle D = 180$

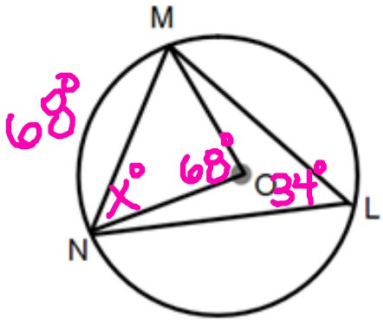
$-108 \quad -108$

$\angle D = 72°$

$\frac{72}{2}$

$X = 36°$

b) Find m<MNO if the m<MLN = 34 degrees



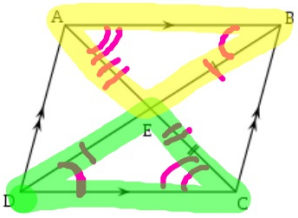
O is the center of the circle

$\angle ADC$ Central Angle = measure of arc

$\angle ABC$ Inscribed Angle = $\frac{1}{2}$ measure of arc

9. One method that can be used to prove that the diagonals of a parallelogram bisect each other is shown below. There are 3 mistakes in the proof. Find and correct them.

Given: ABCD is a parallelogram
Prove: AE = CE and DE = BE



Statement	Reason
1. ABCD is a parallelogram	1. Given
2. AB is parallel to DC AD is parallel to BC	2. Definition of parallelogram
3. $\angle ABD \cong \angle CDB, \angle BAC \cong \angle DCA$	3. When two parallel lines are intersected by a transversal, ~~same-side~~ interior angles are congruent.
4. AE ≅ EC and DE ≅ EB	4. ~~Opposite sides of a parallelogram~~ are congruent
5. $\Delta DCE \cong \Delta BAE$	5. ~~AAA~~ AAS
6. $AE \cong CE, DE \cong BE$	6. CPCTC
7. AE = CE DE = BE	7. Definition of congruent segments

Alternate

Diagonals of a parallelog bisect eac other.