

5) Substitution	$m\angle EN = m\angle AEG$
4) Angle Addition Postulate	$\begin{cases} m\angle 1 + m\angle 2 = m\angle EN \\ m\angle 3 + m\angle 2 = m\angle AEG \end{cases}$
3) Addition Property of Equality	$m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$
2) Reflexive Property	$m\angle 2 = m\angle 2$
1) Given	$m\angle 1 = m\angle 3$
<b>REASONS</b>	<b>STATEMENTS</b>
4.	
3. Deductive Reasoning	
2. Given Information, Definitions, Postulates, Properties, Theorems	
1. Given, Diagram, Prove, Statements, Reasons	

# GEOMETRY

## The Complete Course

Lesson Five

# Planning Proofs In Geometry

KA8465

## Worksheet

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## I. VIDEOTAPE FOLLOW-UP QUESTIONS

I. Introduction.

II. Five key elements of a two-column proof.

- A. Given
- C. Diagram
- C. Prove
- D. Statements
- E. Reasons
  - 1. Given information
  - 2. Definitions
  - 3. Postulates
  - 4. Properties
  - 5. Theorems

III. Drawing and labeling a diagram.

IV. Planning the proof.

V. Strategy for a two-column proof.

- A. Working forward from the given
  - 1. Research the list of geometric facts
  - 2. Find conclusions from each fact in the given
  - 3. State each conclusion in terms of the diagram
  - 4. Find other conclusions that follow in order from previous conclusions
- B. Working backward from the proof
  - 1. Search inventory of geometric facts
  - 2. Find hypotheses needed to conclude what is to be proved
  - 3. State each hypotheses in terms of the diagram
  - 4. Find other hypotheses that allow a conclusion from previous hypotheses

VI. Write a two-column proof.

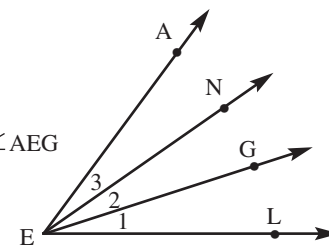
- A. Proof using algebraic properties
- B. Proof using geometric facts

## II. SUPPLEMENTARY EXERCISES

1. What are the five important parts of a formal two-column proof?
2. What are the five reasons that may be used in a geometry proof?
3. The type of reasoning used in a formal proof is \_\_\_\_\_?

4. Given:  $m\angle 1 = m\angle 3$

Prove:  $m\angle LEN = m\angle AEG$



<u>STATEMENTS</u>	<u>REASONS</u>
1) $m\angle 1 = m\angle 3$	1)
2) $m\angle 2 = m\angle 2$	2)
3) $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	3)
4) $\begin{cases} m\angle 1 + m\angle 2 = m\angle LEN \\ m\angle 3 + m\angle 2 = m\angle AEG \end{cases}$	4)
5) $m\angle LEN = m\angle AEG$	5)