

Assignment - Angle Properties.pdf

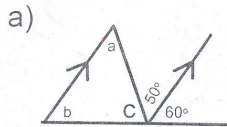
# Solutions...

Section 7 In class Assignment.notebook

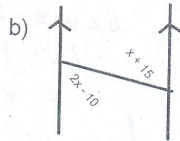
Chapter 7  
In class Assignment

Name: Key

1) For each unknown angle, identify the measurement of the angle AND the property you used to solve it:

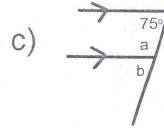


Answers:  
c = 70° (SAT)  
a = 50° (AIA)  
b = 60° (SATT)

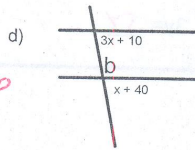


Answers:  
(AIA)  
x = 25  
2x - 10 = 40°  
x + 15 = 40°

$2x - 10 = x + 15$   
 $x = 25$

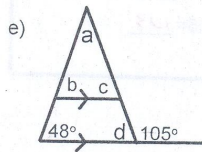


Answers:  
a = 105° (CIA)  
b = 75° (CA)

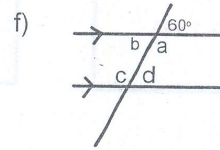


$3x + 10 = x + 40$   
 $2x = 30$   
 $x = 15$

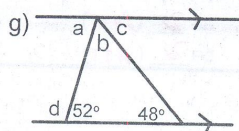
Answers: (CA)  
x = 15  
3x + 10 = 55°  
x + 40 = 55°  
b = 125° (CIA)



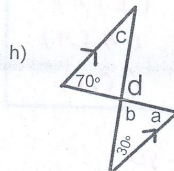
Answers:  
d = 75° (SAT)  
c = 75° (CA)  
b = 48° (CA)  
a = 57° (SATT)



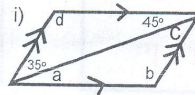
Answers:  
a = 120° (SAT)  
b = 60° (OAT)  
c = 120° (AIA)  
d = 60° (CA)



Answers:  
a = 52° (AIA)  
b = 80° (SATT)  
c = 48° (AIA)  
d = 128° (SAT)



Answers:  
a = 70° (AIA)  
b = 80° (SATT)  
c = 30° (AIA)  
d = 100° (SAT)



Answers:  
a = 45° (AIA)  
b = 100° (SATT)  
c = 35° (AIA)  
d = 100° (SATT)

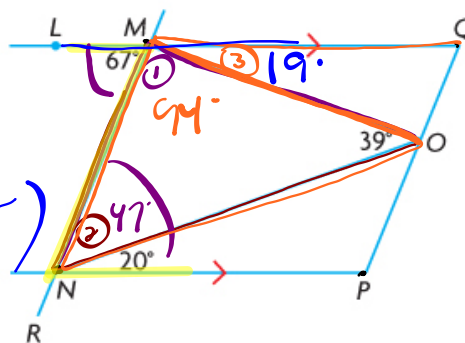
**EXAMPLE 3**

Using reasoning to solve problems

**JUSTIFY!!!**

Determine the measures of  $\angle NMO$ ,  $\angle MNO$ , and  $\angle QMO$ .

① 94° (SATT)  
 ② 47° (AIA)  
 ③ 19° (SAT)



**Tyler's Solution**

$MN$  is a transversal of parallel lines  $LQ$  and  $NP$ .

$MN$  intersects parallel lines  $LQ$  and  $NP$ .

$$\begin{aligned} \angle MNO + 20^\circ &= 67^\circ \\ \angle MNO &= 47^\circ \end{aligned}$$

Since  $\angle LMN$  and  $\angle MNP$  are alternate interior angles between parallel lines, they are equal.

$$\begin{aligned} \angle NMO + \angle MNO + 39^\circ &= 180^\circ \\ \angle NMO + (47^\circ) + 39^\circ &= 180^\circ \\ \angle NMO + 86^\circ &= 180^\circ \\ \angle NMO &= 94^\circ \end{aligned}$$

The measures of the angles in a triangle add to  $180^\circ$ .

$$\begin{aligned} \angle NMO + \angle QMO + 67^\circ &= 180^\circ \\ (94^\circ) + \angle QMO + 67^\circ &= 180^\circ \\ 161^\circ + \angle QMO &= 180^\circ \\ \angle QMO &= 19^\circ \end{aligned}$$

$\angle LMN$ ,  $\angle NMO$ , and  $\angle QMO$  form a straight line, so their measures must add to  $180^\circ$ .

The measures of the angles are:

$$\angle MNO = 47^\circ; \angle NMO = 94^\circ; \angle QMO = 19^\circ.$$

Homework...

p. 72: #2

p. 78: #1, 4, 15

Questions

# Geometric Proofs... The 'Two-Column Proof'

Key Terms (in your notes)...

Notes - Chp. 2.pdf

**deductive reasoning**

Drawing a specific conclusion through logical reasoning by starting with general assumptions that are known to be valid.

**proof**

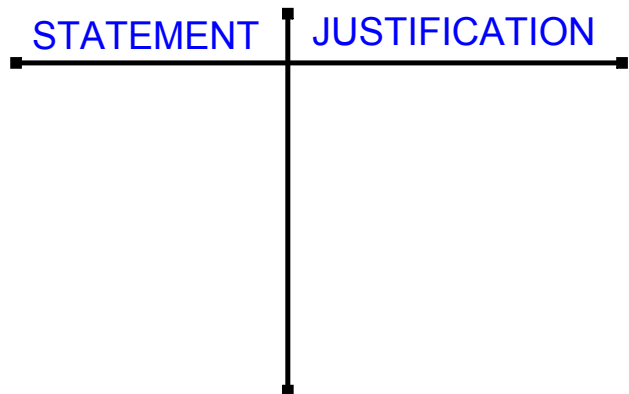
A mathematical argument showing that a statement is valid in all cases, or that no counterexample exists.

**transitive property**

If two quantities are equal to the same quantity, then they are equal to each other.  
If  $a = b$  and  $b = c$ , then  $a = c$ .

**two-column proof**

A presentation of a logical argument involving deductive reasoning in which the statements of the argument are written in one column and the justifications for the statements are written in the other column.



\*\*\*ADD this one to your notes...

converse

A statement that is formed by switching the premise and the conclusion of another statement.

**EXAMPLES...**

*Premise → Conclusion*

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**Conjecture:** If it is raining outside, then the grass is wet.

**CONVERSE:** If the grass is wet, then it is raining.

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**THEOREM:** If you have parallel lines, then the corresponding angles are equal.

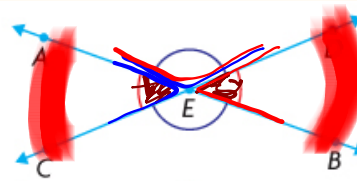
**CONVERSE:** If the corresponding angles are equal, then the lines are parallel.



p. 29

**EXAMPLE 4** Using deductive reasoning to prove a geometric conjecture

Prove that when two straight lines intersect, the vertically opposite angles are equal.



**Jose's Solution: Reasoning in a two-column proof**

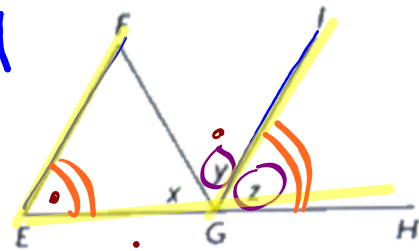
Statement	Justification
$\angle AEC + \angle AED = 180^\circ$	Supplementary angles
$\angle AEC = 180^\circ - \angle AED$	Subtraction property
$\angle BED + \angle AED = 180^\circ$	Supplementary angles
$\angle BED = 180^\circ - \angle AED$	Subtraction property
$\angle AEC = \angle BED$	<b>Transitive property</b>

SAT  
SAT

**Example #2:**

In  $\triangle EFG$ ,  $GI$  bisects  $\angle FGH$

a) If  $\angle E = \angle y$ , then prove that  $EF \parallel GI$



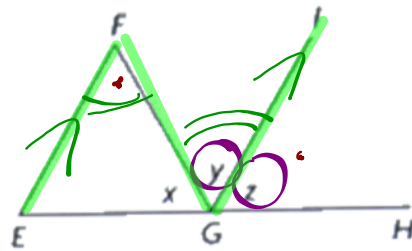
Statement	Justification
$\angle y = \angle z$	Bisect
$\angle E = \angle y$	Given
$\angle E = \angle z$	Transitive
$\therefore EF \parallel GI$	CA

Therefore

$\therefore$

In  $\triangle EFG$ ,  $GI$  bisects  $\angle FGH$

b) If  $\angle F = \angle z$ , then prove that  $EF \parallel GI$



Statement	Justification
$\angle y = \angle z$	Bisect
$\angle F = \angle z$	Given
$\angle y = \angle F$	Transitive
$\therefore EF \parallel GI$	AIA



*Homework...*

*p. 78: #2, 8, 10, 12, 20*

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## Attachments

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Notes - Chp. 2.pdf