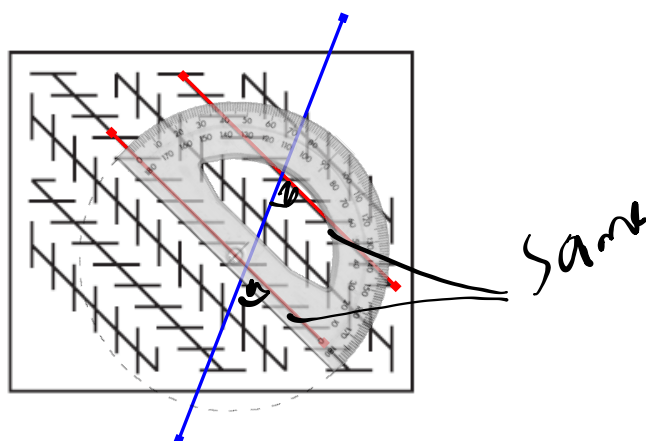


# Homework...

p. 72: #4-6

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

6. Nancy claims that the diagonal lines in the diagram to the left are not parallel. Do you agree or disagree? Justify your decision.

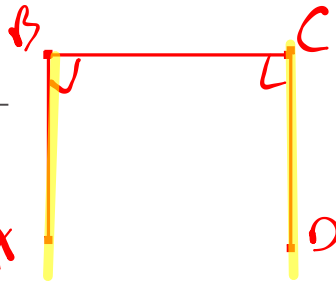


8. a) Joshua made the following conjecture: "If  $AB \perp BC$  and  $BC \perp CD$ , then  $AB \perp CD$ ." Identify the error in his reasoning. ← perpendicular

Joshua's Proof

Statement	Justification
$AB \perp BC$	Given
$BC \perp CD$	Given
$AB \perp CD$	Transitive property

~~$AB \perp CD$~~   
 $AB \parallel CD$  Geometric Shape



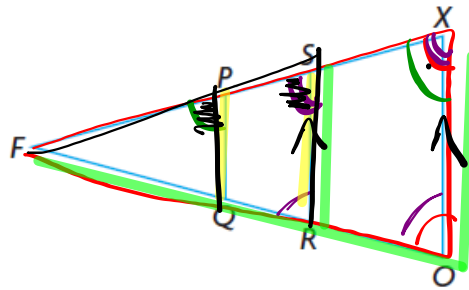
- b) Make a correct conjecture about perpendicular lines.

12. Given:  $\triangle FOX$  is isosceles.

$\angle FOX = \angle FRS$

$\angle FXO = \angle FPQ$

Prove:  $PQ \parallel SR$  and  $SR \parallel XO$



13. a) Draw a triangle. Construct a line segment that joins two sides of

Statement	Justification
$\angle FOX = \angle FRS$	Given
$\therefore SR \parallel XO$	CA

Statement	Justification
$\angle FXD = \angle RSF$	CA
$\angle FPA = \angle FXO$	Given
$\angle FPA = \angle RSF$	Transitive
$\therefore PA \parallel SR$	CA

## 2.3

## Angle Properties in Triangles

## GOAL

Prove properties of angles in triangles, and use these properties to solve problems.

Construct a triangle with paper...

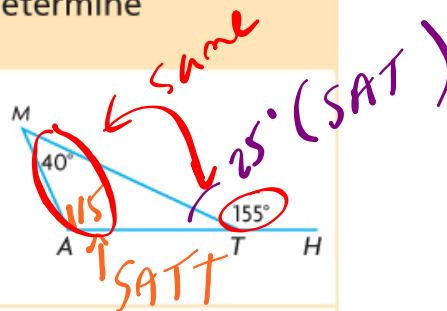
- tear off the angles and line them up!

**CONJECTURE**

## APPLY the Math

### EXAMPLE 1 Using angle sums to determine angle measures

In the diagram,  $\angle MTH$  is an **exterior angle** of  $\triangle MAT$ . Determine the measures of the unknown angles in  $\triangle MAT$ .



### Serge's Solution

$$\begin{aligned} \angle MTA + \angle MTH &= 180^\circ \\ \angle MTA + (155^\circ) &= 180^\circ \\ \angle MTA &= 25^\circ \end{aligned}$$

$\angle MTA$  and  $\angle MTH$  are supplementary since they form a straight line.

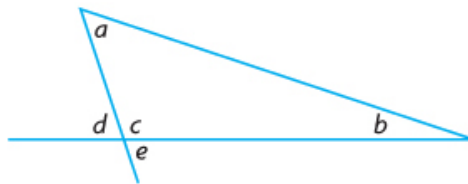
$$\begin{aligned} \angle MAT + \angle AMT + \angle MTA &= 180^\circ \\ \angle MAT + (40^\circ) + (25^\circ) &= 180^\circ \\ \angle MAT &= 115^\circ \end{aligned}$$

The sum of the measures of the interior angles of any triangle is  $180^\circ$ .

The measures of the unknown angles are:  
 $\angle MTA = 25^\circ$ ;  $\angle MAT = 115^\circ$ .

**Your Turn**

Prove:  $\angle e = \angle a + \angle b$



**Answer**



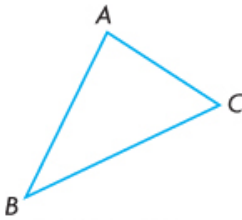
**Key Idea**

- You can prove properties of angles in triangles using other properties that have already been proven.

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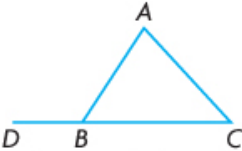
**Need to Know**

- In any triangle, the sum of the measures of the interior angles is proven to be  $180^\circ$ .



$\angle A + \angle B + \angle C = 180^\circ$

- The measure of any exterior angle of a triangle is proven to be equal to the sum of the measures of the two non-adjacent interior angles.



$\angle DBA = \angle BAC + \angle ACB$

p. 90

HW... Section 2.3: #1 - 13

## Attachments

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2s3e1 finalt.mp4

2s3e2 finalt.mp4