p. 78   Hw ???

Extending

20. Solve for x.

a)

$3y$

$(3x + 10)°$

$3x - 10$

$(6x - 14)°$

b)

$(9x + 32)°$

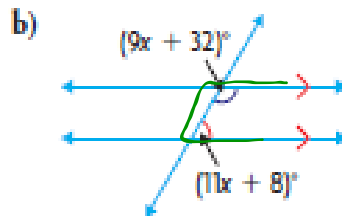$(11x + 8)°$

$3x + 10 = 6x - 14$

$10 + 14 = 6x - 3x$

$\dfrac{24}{3} = \dfrac{3x}{3}$

$8 = x$
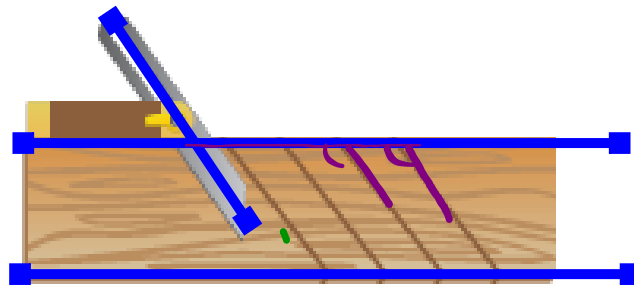
$9x + 32 + 11x + 8 = 180$

$20x = 180 - 40$

$\dfrac{20x}{20} = \dfrac{140}{20}$

$x = 7$

4. An adjustable T-bevel is
   used to draw parallel lines
   on wood to indicate where
   cuts should be made.
   Explain where the transversal
   is located in the diagram and
   how a T-bevel works.
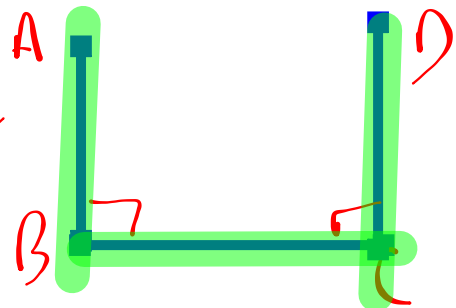
Transversal → Blade of T-level

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

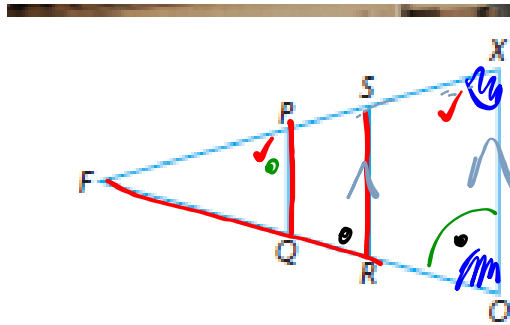| Statement	Justification
$AB \perp BC$	Given ✓
$BC \perp CD$	Given ✓
$AB \perp CD$	Transitive property — *Error*

b) Make a correct conjecture about perpendicular lines.

AB // CD   *CIA*

12. Given: $\triangle FOX$ is isosceles.
          $\angle FOX = \angle FRS$
          $\angle FXO = \angle FPQ$
   Prove: $PQ \parallel SR$ and $SR \parallel XO$

$\cancel{}$ (a)   (b)

b)

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

a)

Statement	Justification
$\angle FPQ = \angle FXO$	Given
$\angle FXO = \angle FoX$	Given
$\angle FPQ = \angle Fox$	Transitive

p. 77

EXAMPLE **3** | Using angle properties to prove that lines are parallel

One side of a cellphone tower will be built as shown. Use the angle measures to prove that braces *CG*, *BF*, and *AE* are parallel.
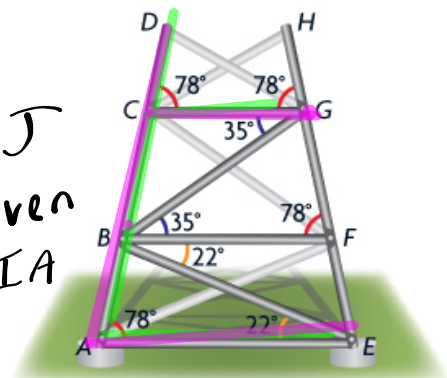
S	J
$\angle CGB = \angle FBG$	Given
$\therefore CG \parallel BF$	AIA

S	J
$\angle FBE = \angle AEB$	Given
$\therefore BF \parallel AE$	AIA

Morteza's Solution: Using corresponding angles

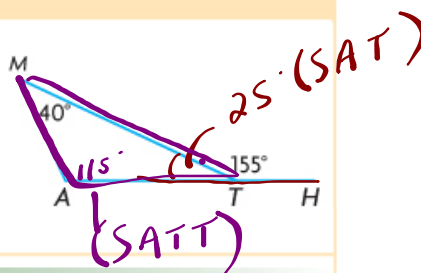|	
$\angle BAE = 78°$ and $\angle DCG = 78°$ - - - - - - - - - - - - -	Given
$AE \parallel CG$ - - - - - - - - - - - - -	When corresponding angles are equal, the lines are parallel.
$\angle CGH = 78°$ and $\angle BFG = 78°$ - - - - - - - -	Given
$CG \parallel BF$ - - - - - - - - - - - - - -	When corresponding angles are equal, the lines are parallel.
$AE \parallel CG$ and $CG \parallel BF$ - - - - - - - -	Since *AE* and *BF* are both parallel to *CG*, all three lines are parallel to each other.

The three braces are parallel.

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 $\triangle MAT$.

[handwritten notes:]

$$S \qquad \qquad J$$
$$\angle MTA = 25 \quad | \quad SAT$$
$$\angle MAT = 115 \quad | \quad SATT$$

$$25 \cdot (SAT)$$
$$(SATT)$$

[diagram: triangle with vertices M, A, T; angle at M = 40°, angle at A = 115°, exterior angle at T = 155°, line through T to H]

Serge's Solution

$\angle MTA + \angle MTH = 180°$ - - - - - - - - - - - - | $\angle MTA$ and $\angle MTH$ are
$\quad \angle MTA + (155°) = 180°$ | supplementary since they form a
$\qquad \qquad \angle MTA = 25°$ | straight line.

$\angle MAT + \angle AMT + \angle MTA = 180°$ - - | The sum of the measures of the
$\quad \angle MAT + (40°) + (25°) = 180°$ | interior angles of any triangle
$\qquad \qquad \qquad \angle MAT = 115°$ | is 180°.

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

## Your Turn

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

Answer

Diagram of a triangle with angles a, b, and interior c, exterior angle e, and d along the line at vertex.
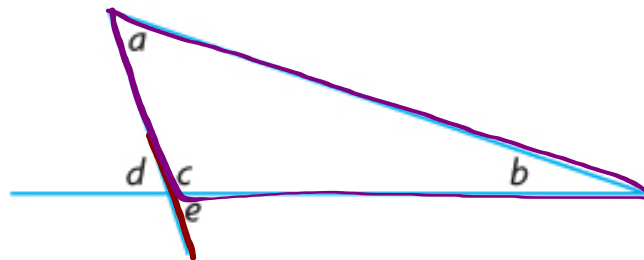
Statement	Justification
$\angle c + \angle e = 180°$	SAT
$\angle a + \angle b + \angle c = 180°$	SATT
$\angle c + \angle e = \angle a + \angle b + \angle c$	Transitive
$\angle e = \angle a + \angle b$	Algebra

In Summary

Key Idea

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

Need to Know

- In any triangle, the sum of the measures of the interior angles is proven to be 180°.

$$\angle A + \angle B + \angle C = 180°$$

- 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.

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

HW... Section 2.3: #1 - 13

HW:
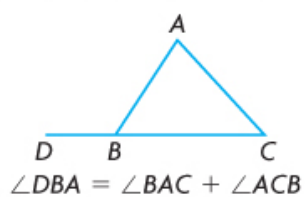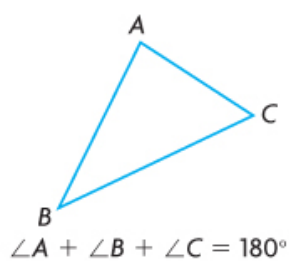
p. 90: #3, 5, 7, 9, 13 [from today's lesson]

Attachments

2s3e2 finalt.mp4