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Homework H07

MATH 3110/5110 (Barsamian)

Due at the end of the day Sun Apr 5, 2020

Problem:	1	2	3	Total	Rescaled
Your Score:					
Possible:	20	20	20	60	10

Suggested Exercises: 5.3 # 6, 7, 8, 9, 11, 15, 19

The three problems presented on this cover sheet are your **Homework Assignment** to be turned in.

- Write your solutions on your own paper.
- Assemble your solutions in order
- Use the CamScanner App to take pictures of this cover sheet and your solutions and save them as a single PDF file
- Submit the PDF file in the Blackboard Assignment area
- The assignment is due at the end of the day on Sunday, April 5, 2020.

[1] In our Teams meeting for Day #27 (Mon Mar 30), we discussed Theorem 5.3.2 The Linear Pair Theorem

If $\angle ABC$ and $\angle CBD$ form a linear pair, then they are supplementary

We discussed the structure of the book's proof:

Book's Proof Structure:

- Proof Part 1: Prove that $\alpha + \beta < 180$ cannot happen.
- Proof Part 2: Prove that $\alpha + \beta > 180$ cannot happen.
- Therefore $\alpha + \beta = 180$

And I presented a more fully-explained version of the book's proof of Part 1.

- I broke the sentences up into single statements. (The book sometimes combined more than one statement into a single sentence.)
- I illustrated each statement
- I justified each statement

Your assignment is to do the same thing for Part 2 of the book's proof.

[2] (Book's exercise [5.3#6]) Prove Theorem 5.3.9 (Vertical Angle Theorem)

In a protractor geometry, if $\angle ABC$ and $\angle A'B'C'$ form a vertical pair, then $\angle ABC \cong \angle A'B'C'$.

[3] (Book's exercise [5.3#9]) Show that if $\triangle ABC$ is as given in Example 5.1.3, then

$$(AC)^2 \neq (AB)^2 + (BC)^2$$

Thus, the Pythagorean Theorem need not be true in a protractor geometry.