Geometry A
Sec 3.2-3.3

Parallel Line Postulates/Theorems

The postulates and theorems in sections 3.3 and 3.4 are converses of each other. Since both the original statements (sec 3.3) and their converses (sec 3.4) are true, these postulates and theorems can be written as biconditional statements.

We will use acronyms to represent both the original postulate/theorem and its converse. The order of the letters will signify the order of the if-then sentence. These rules are commonly used as reasons in proofs throughout this course. The beginning letter(s) will represent the **given**, while the ending letter(s) will represent what you are trying t**o prove**.

Whenever a problem refers to parallel lines, think about these special angles. CA's, AI's, AE's and CI's.

Acronyms:

PCAC If two **P**arallel lines are cut by a transversal, then **C**orresponding **A**ngles are **C**ongruent.
CACP If **C**orresponding **A**ngles are **C**ongruent, then the 2 lines are **P**arallel.

PAIC If two **P**arallel lines are cut by a transversal, then **A**lternate **I**nterior angles are **C**ongruent.
AICP If **A**lternate **I**nterior angles are **C**ongruent, then the 2 lines are **P**arallel.

PAEC If two **P**arallel lines are cut by a transversal, then **A**lternate **E**xterior angles are **C**ongruent.
AECP If **A**lternate **E**xterior angles are **C**ongruent, then the 2 lines are **P**arallel.

PCIS If two **P**arallel lines are cut by a transversal, then **C**onsecutive **Interior** angles are **S**uppl.
CISP If **C**onsecutive **I**nterior angles are **S**upplementary, then the 2 lines are **P**arallel.

Examples:

<u>Dual Parallel Theorem</u>:
If two lines are parallel to the same line, then they are _____ to each other.

Create a sketch.

<u>Dual Perpendicular Theorem</u>:
In a plane, if two lines are perpendicular to the same line, then they are _____ to each other.

Create a sketch.

Why doesn't the Dual Parallel Theorem say "in a plane"?