Perpendicularity of a Line and a Plane - Lesson 6-2

Today, after going over the 6.1 homework, we discussed what it means for a line to be perpendicular to a plane. We started with a definition for this situation and then a theorem that makes proving it a little easier:

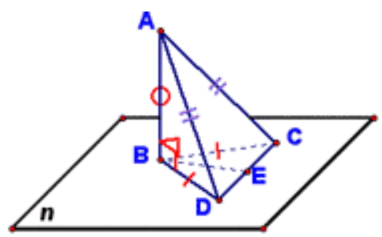
A line is perpendicular to a plane if it is perpendicular to every one of the lines in the plane that pass through its foot (Definition of a Line ⊥ to a Plane).

Theorem 47: **If a line is ⊥ to two distinct lines that lie in a plane and that pass through its foot, then it is perpendicular to the plane (Line ⊥ to Plane Theorem).**

We then went over the following example. Note that the plane should be labeled m in the diagram! Also...you should make sure you understand how we used Theorem 48 and how we used the converse of the equidistance theorem!!

Given: B, C, D, and E lie in a plane
$\overline{AB} \perp n$
$\overleftrightarrow{BE} \perp$ bis. $\overline{CD}$

Prove: △ADC is isosceles



	Statements	Reasons
	1. $\overline{AB} \perp n$	1. Given
	2. $\overline{AB} \perp \overline{BD}$ $\overline{AB} \perp \overline{BC}$	2. Definition of Line ⊥ Plane
	3. ∠ABC and ∠ABD are right ∠s	3. Defn. of ⊥ lines
A	4. ∠ABC ≅ ∠ABD	4. RAT
	5. $\overleftrightarrow{BE} \perp$ bis. $\overline{CD}$	5. Given
S	6. $\overline{BC} \cong \overline{BD}$	6. Converse of Equidistance Theorem
S	7. $\overline{AB} \cong \overline{AB}$	7. Reflexive Property
	8. △ABC ≅ △ABD	8. SAS (6, 4, 7)
	9. $\overline{AD} \cong \overline{AC}$	9. CPCTC
	10. △ADC is isosceles	10. Defn. of isos △

This stuff really shouldn't be too bad for you...the key is being able to "see" the diagrams...in other words...make sure you can see how the diagrams lines relate to the planes and what the shapes really look like.