Chapter 7, Sections 1-3. (Main idea: Solving non-right triangles.)

I think it is best to understand both the Law of Sines and the Law of Cosines before you start working any problems. Then look at which types of problems that each can be used to solve. When you start trying to use either of them, it will be obvious whether you have enough information to use it to solve the triangle. I do not think you should start by thinking about all the possible cases as they discuss in the book. It's not wrong, but I believe that it makes the material seem more complicated than necessary.

First, do the first half of the 7.1 homework. Then do the first half of the 7.3 homework.

Next, start the word problems in 7.1 and 7.3. For each of those, it is vital that you start by using the words only to draw a figure illustrating the problem. Then use that figure to solve it. You can check whether you have the right figure by comparing with the one in the text. But DO NOT RELY ON THE FIGURES IN THE TEXT. You must be able to draw figures yourself from the words. Talk to a tutor or the instructor if you need help. You will probably want to work no more than two or three word problems a day and get help before trying more.

Next, it is important to understand the various ambiguities that can arise. That's covered mainly in Section 2 and we'll discuss that in class. When solving applied problems that someone has set up, usually the ambiguous case doesn't arise, because in an applied problem the measurements are taken in such a way to avoid it. But to fully understand how to solve non-right triangles, you must understand all the possibilities.

Also, after you have begun to solve a given triangle, in the second step, you often have a choice of whether to use the Law of Sines or the Law of Cosines. The Law of Sines is easy to apply, but the Law of Cosines leads to a more straightforward solution. Keep these in mind:

1. The sum of the angles in a triangle is 180^0.
2. The longest side is opposite the largest angle, the shortest side opposite the shortest angle, etc.
3. When using the Law of Cosines, any ambiguities are very easy to see and deal with.
4. When using the Law of Sines to solve for an angle, if it is known that the angle is not the largest angle in the triangle, then it is less than 90^0, and then you don't have to think about ambiguities.

The area formulas in sections 7.1 and 7.3 are both important. However, it is not necessary to memorize those. You must memorize both the Law of Sines and the Law of Cosines.

7.1: # 3, 7, 9, 15, 28, 29, 37, 41

7.2: # 3, 5, 7, 9, 13, 17, 27

7.3: # 9, 13, 20, 35, 39, 41, 52, 59, 61

Chapter 7, Sections 4 and 5: (Main idea: Vectors)

Vectors are very important in physics to deal with force and motion and also in navigation. There is quite a lot of terminology in these sections. You may prepare one page of notes on this to use on the test. Do not include examples – only definitions, theorems, and written explanations. I do think that examples are important and you should study them and do many examples. Your notes should be a minimal amount of material to help you remember the ideas and formulas.

The vector applications problems in 7.5 involve navigation (review Chapter 2, section 5) and combination of forces. All of them involve solving triangles. As in Chapter 2, section 5, it is vital that you DRAW A FIGURE to illustrate each problem from the words alone. Use the figure in the book to check whether your figure is correct before you do any computations.

Sometimes people give bearing in words, without numbers. For instance the bearing "Northwest" when used precisely in a math problem, means halfway between north and west, so that is N 45^0 W or 315^0, if you are using the one-number method of describing bearing.

7.4: # 1, 2, 5, 8, 9, 10, 11, 15, 29, 33, 35, 37, 38, 43, 51, 53, 62, 67
7.5: # 3, 7, 9, 10

Chapter 7 Test:

Use the Chapter Review to help you prepare your page of notes (one side of one 8.5x11 page) to use on the test. It must be in your own handwriting, cannot include the Law of Sines or Law of Cosines, which you must memorize, but should include all other formulas, with any definitions or explanations needed. NO EXAMPLES.

You may use a calculator for Test 4, so use it as you work this chapter test.

Chapter 7 Test. All problems. Same instructions as previous chapter tests.