Note: As you begin to write programs, you always want to keep in mind the ultimate debugging tool: the print statement. If you aren’t getting the results you should, print the values of variables at various points in the program and make sure their values agree with your expectations. (Of course this assumes your code compiles in the first place.)

1. Read pages 41 through 106.

2. Do problem 14 on page 109 of the text.

3. Image we want to estimate the height of various buildings around campus. We’ll do this by standing some distance away from the building, face directly toward it, and look up to highest point we can see in front of us. We then estimate the angle, in degrees, from the horizontal to the highest point. Next we walk toward the building and count the number of steps (i.e., paces) before we hit the building. Let’s assume that each step is three feet and that we’re six feet tall. We’ll also assume the ground is horizontal between our observation point and the building. Write a program that will query the user for the observation angle, in degrees, and the number of paces from the observation point to the building. The program then prints the estimated height in feet. However, since the angle measurement may not have been accurate, have the program also print the height if the angle measure was off by plus or minus five degrees. Keep in mind that FORTRAN trig functions all assume the arguments are in radians, not degrees. A listing of built-in FORTRAN functions is given in Table 2.3 on page 58.

For what it’s worth, here is a sample session with my solution to this program. Values entered by the user are show in bold.

Enter the angle (in degrees) to the highest point.
45
Enter distance to base of object in paces (3 feet/pace).
10
Using observed angle, height is: 36. feet.
If true angle five less than observed, height is: 31.1729889 feet.
If true angle five more than observed, height is: 41.7526093 feet.

Put these two programs in a directory called HW2 (where some variation of upper- and lower-case letters is possible), and submit them similarly to how you submitted the first electronic assignment.

Remember to do your own work—collaboration is not acceptable.