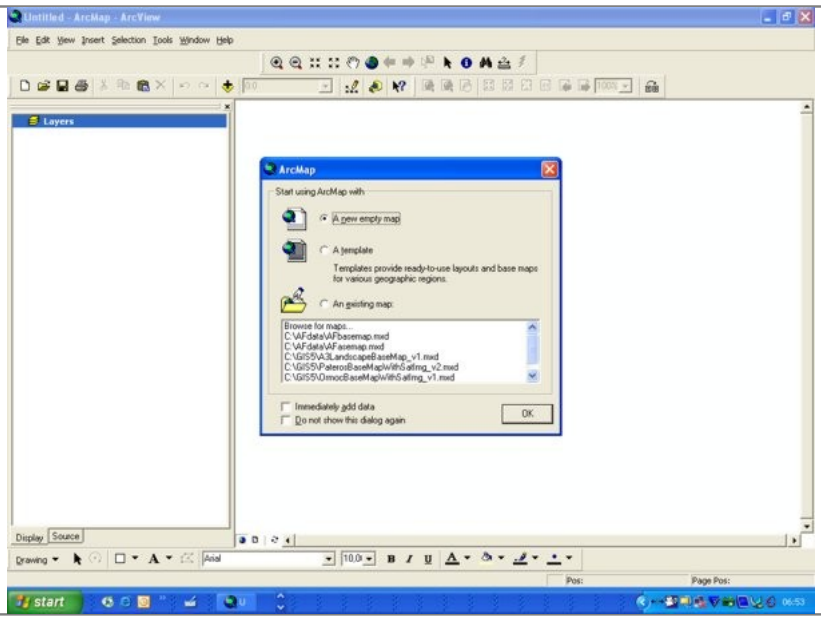
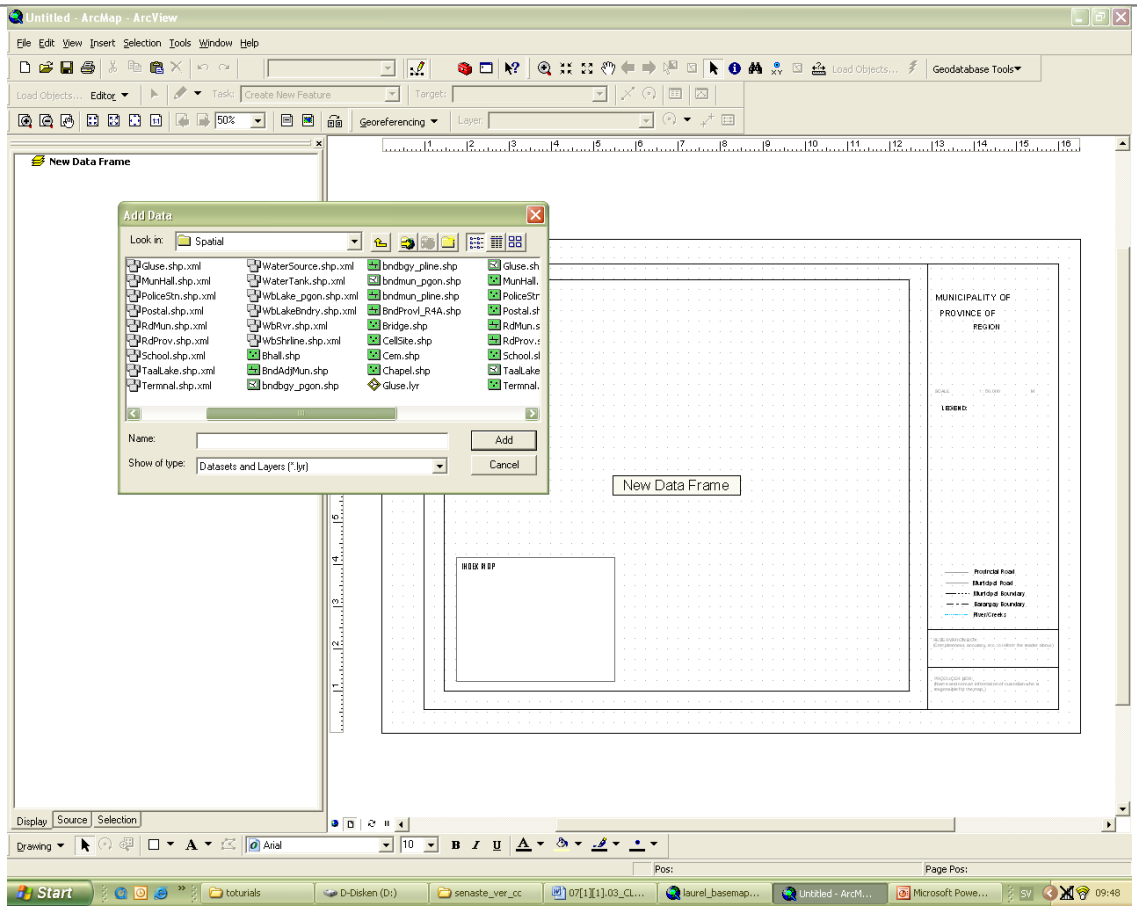
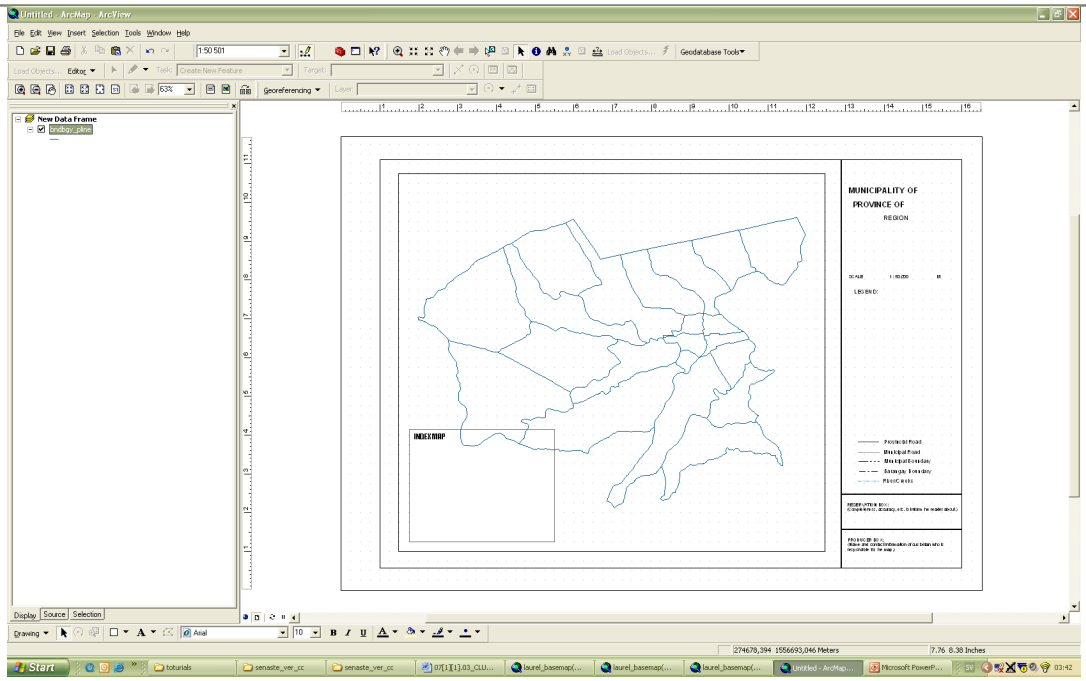
7.4 CLUP Basemap Template Tutorial

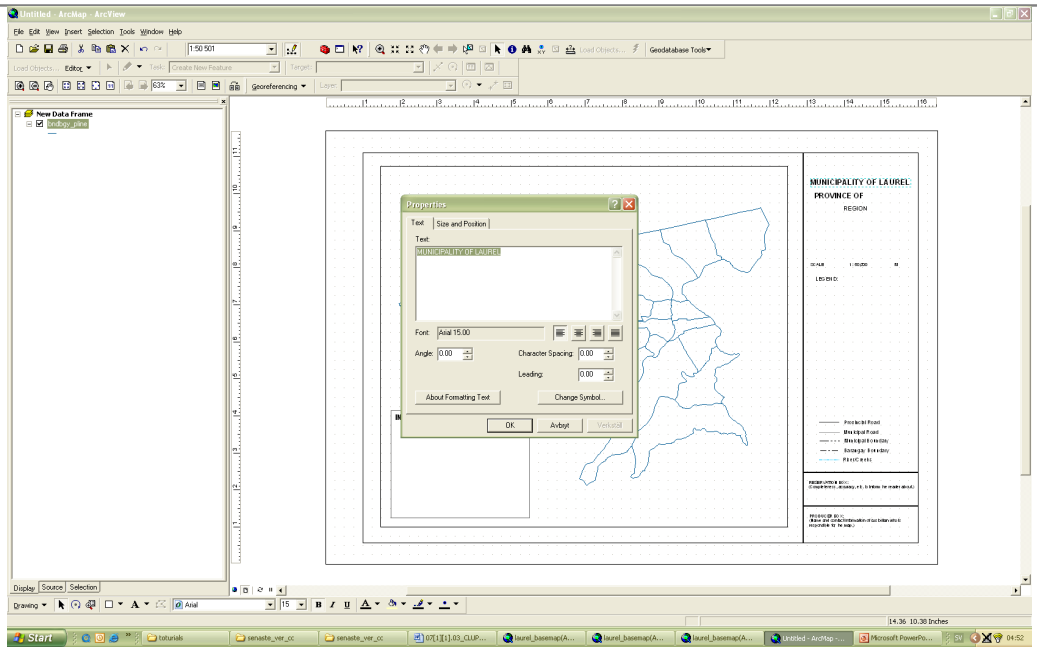
	Introduction
	In this exercise we will use a template to make a base map. The main purpose for the exercise is to get familiar with the tools to modify a template and populate it with data and proper accessories. *You can easily create your own template to use for your maps. It is also possible to edit an already existing template to your preferences. In this exercise, however, we will use the template prepared in the Cookbook. This template is set up for a landscape A3 print out map* *By the term CLUP Basemap we understand a map for background use. When using GIS, the base map features are put under other layers that are important for a specific analysis. We use the base map (features) to make it easy for the map user to locate sites and zones according to streets, rivers, districts, etc.*
1	**Getting started**
1.1	Open ArcMap. A popup window with three options will appear (see image below). The options are: A new empty map A template An existing map
	
1.2	Choose *A template*. Then click **OK**.
1.3	Browse and select *Laurel_Basemap(A3).mxt*, then click **Add**, see image below. The file is found in the folder *C:\HLURB\CLUP\01_CLUPGIS (Laurel)* .



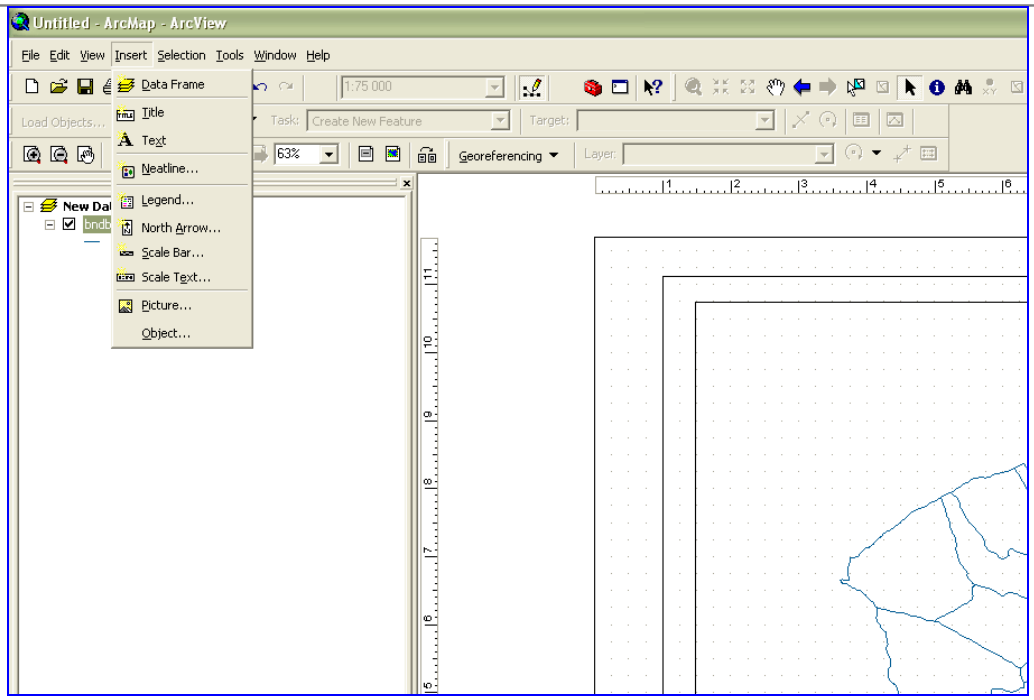
1.4	The template will now appear in your workspace. Check what will happen by changing from Layout View to Data View. You can do this either by selecting **View > Data View** from the menu bar or by using the *Data View* or *Layout View* buttons, found at the bottom. During this tutorial you will be working in the Layout View when not otherwise noted. Change back to the Layout View.
2	**Adding Data**
2.1	Click on the add data button and browse for and select the following base map features: bndbgy_pgon (barangay boundaries) brgnd-waterboun (municipal water boundary) RdProv (provincial roads) RdMun (municipal roads) WbRiver (rivers) These shapefiles are found in this folder: *C:\HLURB\CLUP\01_CLUPGIS (Laurel)\00_BM*. Click on **Add**. Now the map will appear as in the image below:

	
3	**Saving a Map Document**
3.1	In the menu bar, select **File > Save As…** Browse to /Workfolder/ . Name the file *basemap_v1* and make sure that the file type is ArcMap Documents. Click on **Save**. Don't forget to save your progress now and then throughout the exercise.
4	**Applying Symbology and Changing Names to Layers**
	It's a very good idea that already in this step assign proper symbology to the layers that will constitute the base map. In our case, we won't use any land cover features (e.g. land use). Due to this, there's a risk that the map becomes too black-and-white and dull. By assigning a light color to the Bndmun_pgon, the areas belonging to the municipality will clearly be visible and separated from those belonging to adjacent municipalities. *It's also a good idea to rename the default layer names (that correspond to the actual file names) to more comprehensible names.*
4.1	Right-click on the bndbgy_pgon layer and select **Properties**. The *Properties* window appears.
4.2	Go to the **General** tab. Rename *bndbgy_pgon* to 'Barangay boundary'. Click **Apply**.
4.3	Now go to the **Symbology** tab. Click on **----** and the *Symbol Selector* window appears.
4.4	Click on the small arrow next to *Fill Color*. A list box containing some colors appears. Select *No Color* (found at the top).
4.5	Now, still in the *Symbol Selector* window, click **Properties**. The *Symbol Property Editor* window appears.
4.6	Set the *Outline width* to *1,000*. Now click **Outline**.
4.7	Select the city limit symbol (found in….). Click **OK**, then **OK** again.

4.8	Now, rename each layer properly and assign proper symbology to it. Refer to Chapter 4.21.03 on symbology tips. Follow the steps 4.1-7 above. Alternatively, you can click directly on the layer name in the table of content to rename it and double-click on the layer symbol to open the *Symbol Selector* window.
5	**Setting Data Frame Properties**
	Keep in mind that a printed map must have a logic and even scale (e.g. 1:10,000; 1:25,000; 1:50,000; 1:100,000), that is a scale that makes sense and is easy to use for calculation of real-world distances. When using any template you should find such a scale that will make the map features fill the data frame as much as possible. *In our A3 template, Laurel tends to be too small using the scale 1:75,000 and just about a bit too large when using the scale 1:50,000. We will try to extend the Data Frame so that all features will fit within the frame when using the scale 1:50,000.*
5.1	Set the map scale to 1:50,000 by using the map scale selector tool, found in the toolbar.
5.2	Right-click on the Data Frame in the table of content (a top of all layers) and select Properties. The *Data Frame Properties* window will appear. This window contains several tags. Go to the **Data Frame** tab, see image below.
5.3	Select *Fixed scale* and verify that this is 1:50,000. Click *Apply* then *OK*. Note that the map scale selector tool and the "normal" zooming tools in the toolbar now have been disabled. Instead, you will be served by the *Layout toolbar* zooming tools (see image below).
5.4	Click on *Focus Data Frame* button ( ) in the *Layout* toolbar. Select the *Select Elements* tool ( ), drag the data frame both horizontally and vertically so that it includes the black margin line (see image below).
5.5	Use the *Pan* tool in the normal toolbar ( ) to move the map to its best position in the data frame. (The *Layout Pan* tool ( ) will move the whole template.)
6	**Adding and Changing Text**
6.1	Click on the text string that reads 'MUNICIPALITY OF'. It should now appear in a box. This means that the text is selected. Either double-click or right-click and choose **Properties**. The *Properties* window will appear, see image below.

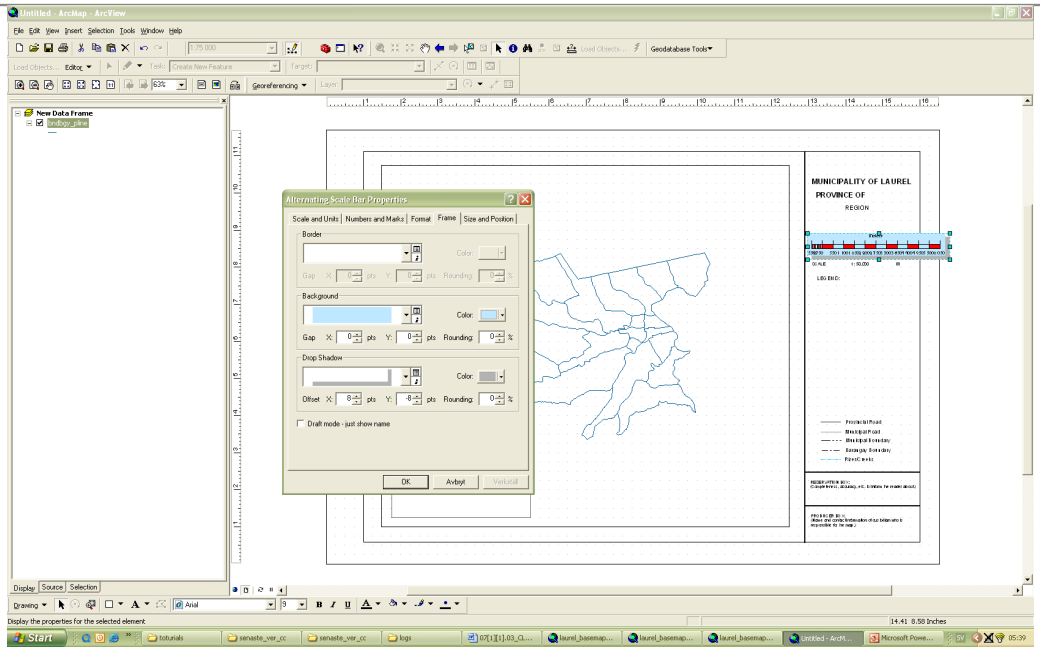


6.2	Make sure that you are in the **Text** tab. Type 'MUNICIPALITY OF LAUREL', then click **Apply**.
	As you can see in the Properties Window, there are two tabs, Text *and* Size and Position*. There are here a lot of text properties that can be adjusted to your personal preferences. Feel free to do that. Only a reminder! One advantage with using a template is that different maps get a similar layout. If you change a lot of properties, you better also save a new template file so that your other maps can have the same appearance.*
6.3	Repeat step 6 and 7 to change the appropriate text into 'PROVINCE OF BATANGAS' and 'Region IV A'.
6.4	Go to the menu bar. Select **Insert > Text**. A text box appears in the data frame. Type 'BASE MAP', then drag it with the mouse and place it below the 'Legend' text. Make it bigger by opening the Properties window for this text. Choose text size 24.
7	**Inserting map elements**
	In the Insert menu you have some options to insert different map elements. (See image below.) In this exercise we will insert a scale bar, a north arrow and a legend. All elements are easy to drag and drop wherever you want to place them in the map. It is also possible to resize and reform them by selecting a corner of an element and dragging it. Also, you can use the Properties window for each element to change it according to your preferences.

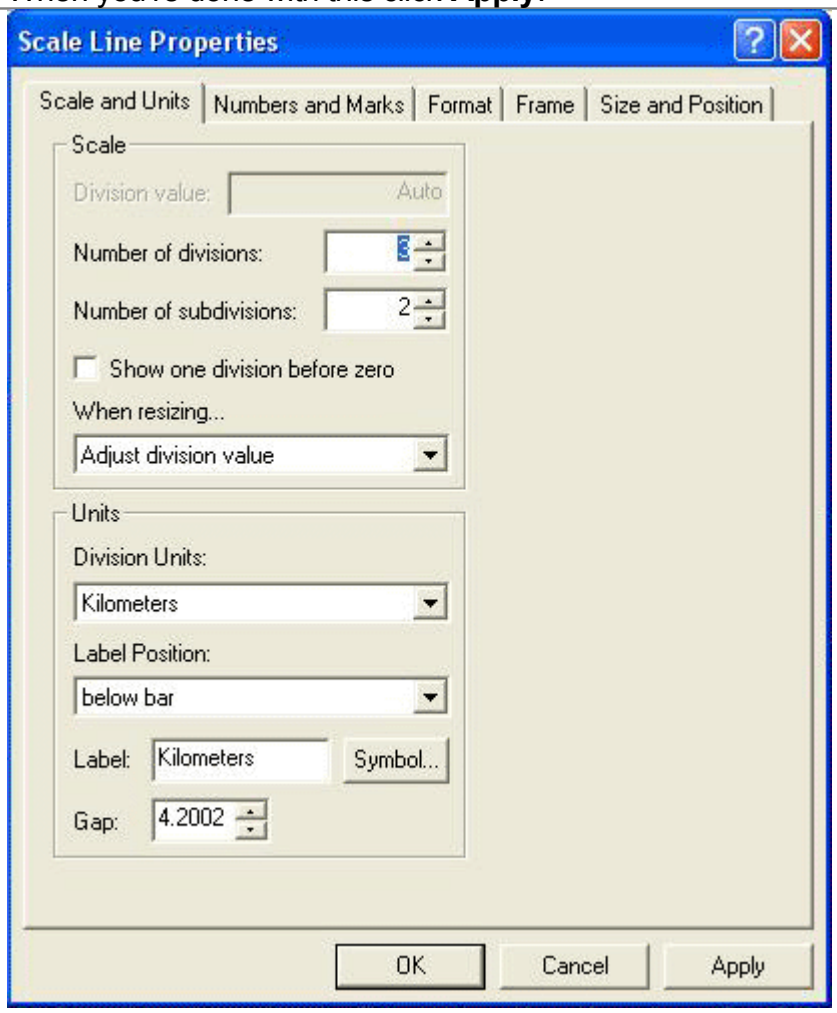


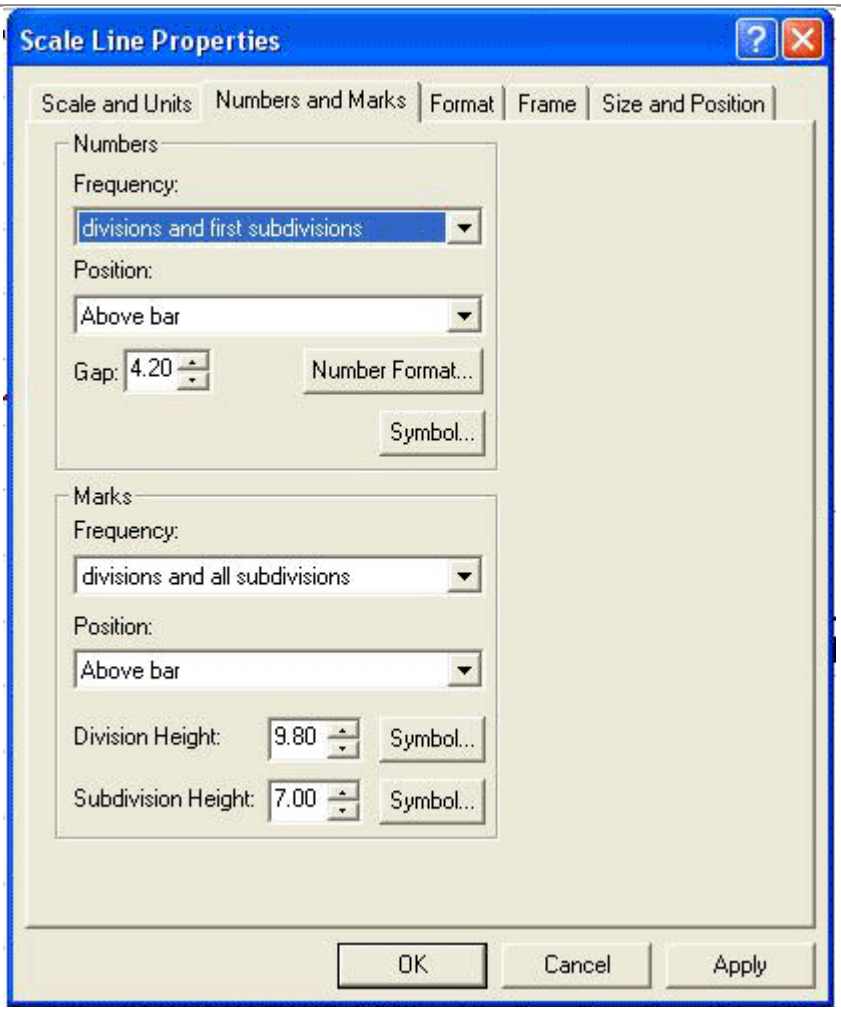
8 Inserting Scale Bar

8.1 Select **Insert > Scale Bar**. The *Scale Bar Selector* window appears. See image below.



8.2 Choose one of the scale bar types (for example *scale line 1*).

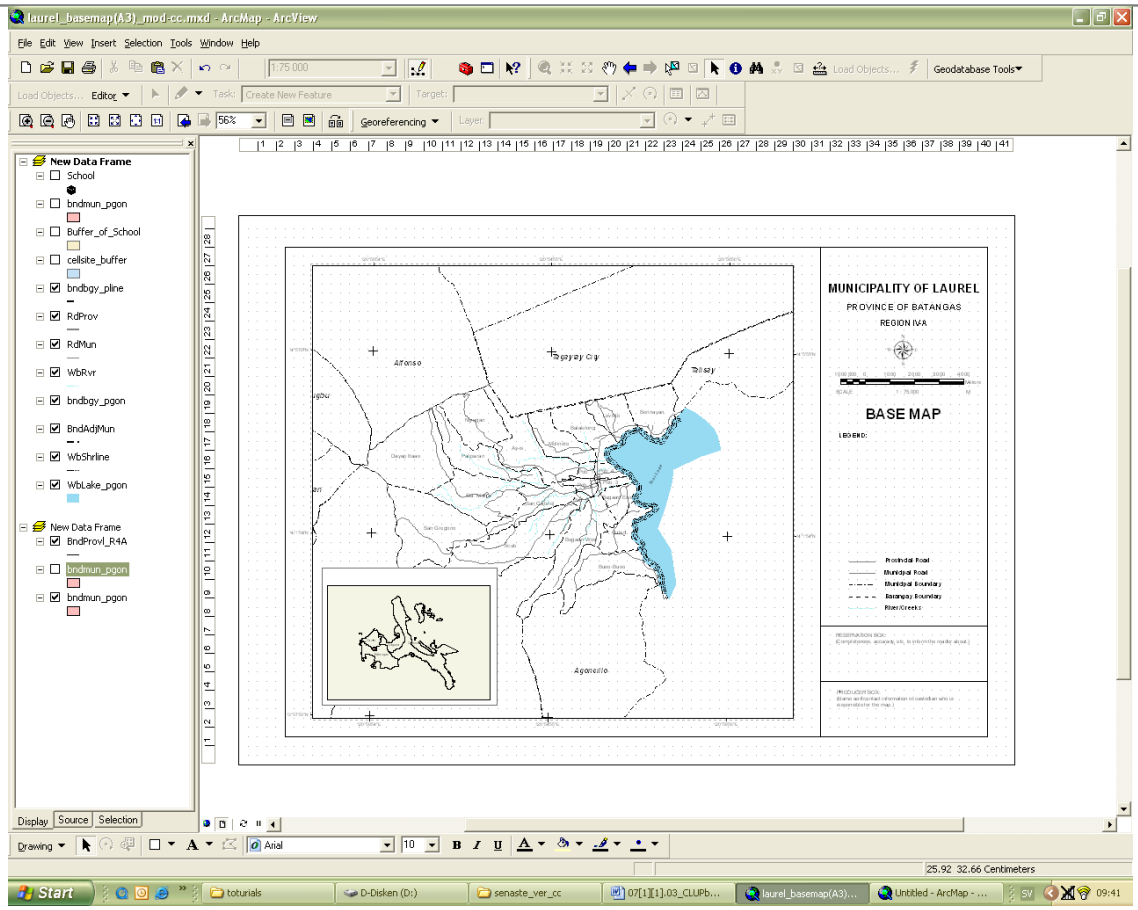
8.3	Click on **Properties**. The *Scale Line Properties* window opens. Here you can choose and try to find what properties could be assigned for a nice-looking scale bar. You will get a nice scale bar in the right information column of the template by using the settings below.
8.4	Go to the **Scale and Unit** tab. Select the following settings (also refer to the image below): *Scale:* *Number of divisions: 3* *Number of subdivisions: 2* *When resizing: Adjust division value.* *Units:* *Division Units: Kilometers* *Label Position: below bar* When you're done with this click **Apply**.
	
8.5	Go to the **Numbers and Marks** tab. Select the following settings in both the *Numbers* and the *Marks* section in the window (also refer to image below): *Frequency: divisions and first subdivisions.* *Position: Above bar* When you're done with this click **Apply** followed by **OK**.



8.6	Drag the scale bar to a position similar to the one in the image below. Resize it so that you will have the marks on 0.5, 1, 2 and 3 kilometers. You can go back and change settings by right-clicking on the scale bar and selecting **Properties**.
9	**Inserting North Arrow**
9.1	From the menu bar, select **Insert > North Arrow…** The *North Arrow Selector* window opens. Select one type and feel free to change some properties. Click **OK**.
9.2	Drag the north arrow and place it in a similar position as shown in the image below. You can also resize it to your preferences.
10	**Inserting Legend**
10.1	Now you will insert a legend. First make sure that the layers are named in a comprehensible way. (You should already have done this in step 4.1-7 above)
10.2	Select **Insert > Legend…** The *Legend* wizard appears (see image below).

10.3	A legend item is added by double-clicking on map layer ---- Sort the legend items in the following order by using the arrows at the right: Barangay Boundary, Municipal Road; next layer; etc.; Click **Next**.
10.4	In this step of the wizard you can change some text properties. Size 20 and font Arial will work fine. Click **Next**.
10.5	In this step of the wizard you can edit the legend frame properties. No legend frame is however necessary. Click **Next**.
10.6	In this step of the wizard you can edit the legend items properties. The *Patch* fields refer to the size of the symbol (point, line or polygon). Click **Next**.
10.7	In this last step of the wizard you can edit spacing in the legend. You can choose to change the settings or use the default settings. Click **Finish**.
10.8	The legend is added to the map. Drag it and place it at a suitable place at the right (compare to image below). If you're not satisfied with the appearance of the legend, you can easily edit each legend item by clicking on it. You can also delete the legend and run the wizard again from the beginning.
11	**Adding and Editing Barangay Names in the Map**
11.1	In the table of content, right-click on the *Barangay boundary* layer and choose **Label Features**. If you have the "correct" settings, the barangay names are added to the map and placed on their default positions. If not, don't hesitate. We'll take care of this very soon.
11.2	Open the *Properties* window for the layer *Barangay boundary*. (Right-click on the layer in the table of content and choose **Properties**.) Select the **Labels** tab, see image below.
11.3	Make sure that the *Label features in this layer* box is selected. From the drop-down menu to the *Label Field*, select *B_NM* (which is the column that contains barangay names). You might also want to change the text size to 10. Click **Apply**, then **OK**.
11.4	ArcMap places the labels automatically. You might have to improve the positions of the labels if they are overlapping each other or important features in the map. (As for example the Poblacion1-5 barangays). To be able to place labels manually, switch to the Data View (refer to step 1.4 above if you forgot how). Right-click anywhere in the map and select *Convert labels to annotations.* A window with the same name appears, see image below.
11.5	Set the following In the *Convert labels to annotations* window (also see image above). Select *In the map*. Select *All features*. Make sure that you have the *Barangay boundary* layer. (If not, you need to exit the window and make sure that only this layer is set to label features.) Select *Convert unplaced labels to unplaced annotations*. Click **Convert**.
11.6	Switch back to the Layout view ( ). Use the *Select Elements* tool ( ). Adjust the annotations (the Barangay names) that need a better position by selecting, dragging and dropping them. You can also edit the font and size separately by double-clicking on each annotation.
12	**Adding and Editing Other Text in the Map**

12.1	
12.2	
13	**Inserting an Index Map**
13.1	Go the menu bar. Select **Insert > Data Frame**. A new data frame will appear on the map.
13.2	Drag the new data frame to the index map box in the template. Resize it so that it fits in the box.
13.3	In the table of content, rename this new data frame to 'Index Map'. (You could also remain the existing data frame to 'Base Map Laurel'.) To do this, right-click on the data frame, choose **Properties** and the **General** tab and type the new name.
13.4	Click on to add the following layers to the *Index Map* data frame: *BndAdjMun* *Bndmun_pgon* *TaalLake* They are all found in this folder: *C:\HLURB\CLUP\01_CLUPGIS (Laurel)\00_BM\.*
13.5	Assign suitable color by opening the *Symbology Selector* window. (Refer to step 3.1-6 if you forgot how). The *TaalLake* layer ought to be assigned a lake-blue color. Assign a light grey color to the *Bndmun_pgon* layer. This is done to highlight Laurel municipality in the index map for the sake of easier orientation for the map user.
14	**Adding a Grid to the Map**
14.1	Open the *Data Frame Properties* window for the *Base Map Laurel* data frame. (Refer to step 5.2 if you don't remember how to do this.) Go to the **Grids** tab. Click **New Grid…** The *Grids and Graticules* wizard opens.
14.2	Select *Graticule: divides map by meridians and parallels.* Click **Next**.
14.3	This is the *Create a graticule* step: Select *Tick marks and labels*. Enter the intervals 0°2'0" for both *latitude* and *longitude*. Click **Next**.
14.4	No changes are necessary in *Axes and Labels* step. Click **Next**.
14.5	*Create a graticule.* Select *Place a simple border at edge of graticule* and *Store as fixed grid that updates with changes to the data frame.* Click **Finish**.
14.6	Back in the *Data frame Properties* window, click **Apply**, then **OK**.
15	**Finalizing the Map Design and Composition**
15.1	The last step will be to arrange all the elements so that you are satisfied with the result. At the end your design and styling of the map it could look like this:



If you have a map similar to the one above you have completed the exercise. Congratulations!