

## Session 1: Introduction to GIS - ArcMap Basics

### Objectives

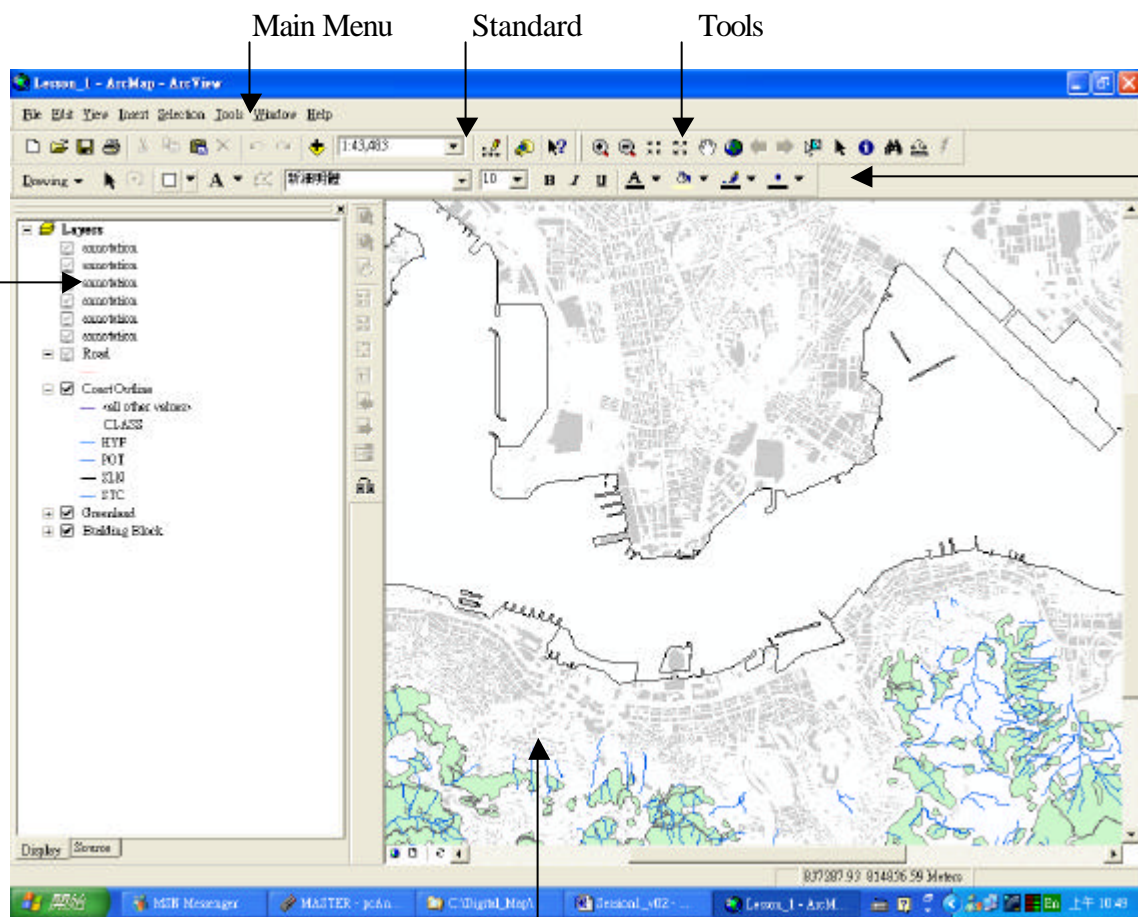
- To recognize ArcMap (ArcView 8.3) user interface
- To learn about the basic mapping functions of ArcMap
- To explore and query map data under ArcMap environment

### *Task 1: Recognizing ArcMap user interface*

#### *Toolbars*

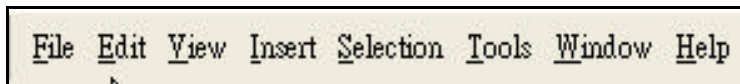
Look at the top of the ArcMap window. There are four bars shown as below. We will use these buttons to perform various GIS functions.

Table of Content (TOC)

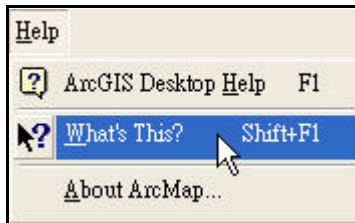


Map Window

1. Main Menu:



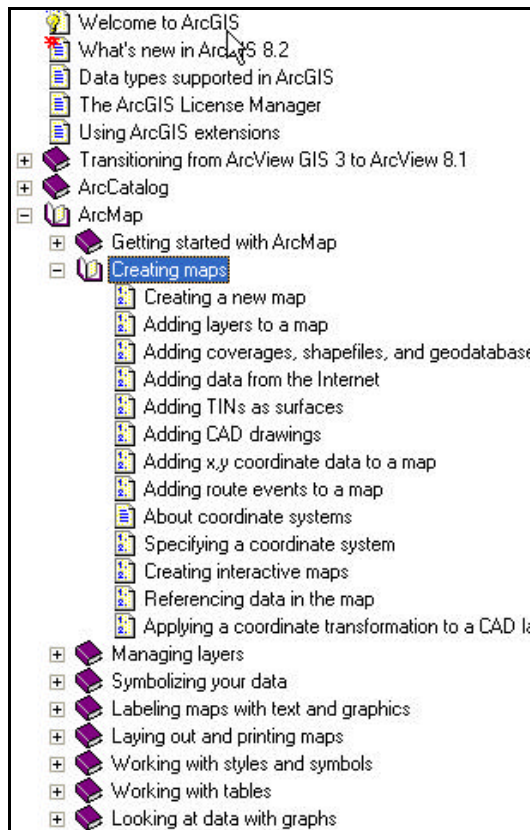
a. Getting help in the ArcMap



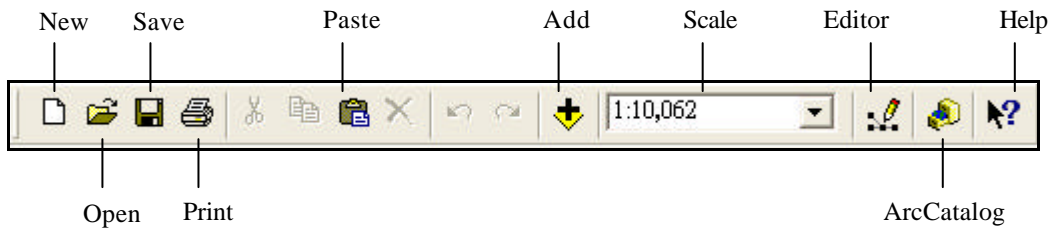
- Click the **What's This?** Button
- With the **Help** pointer, click the item in the ArcMap window about which you want more information

b. Using the help contents to get help

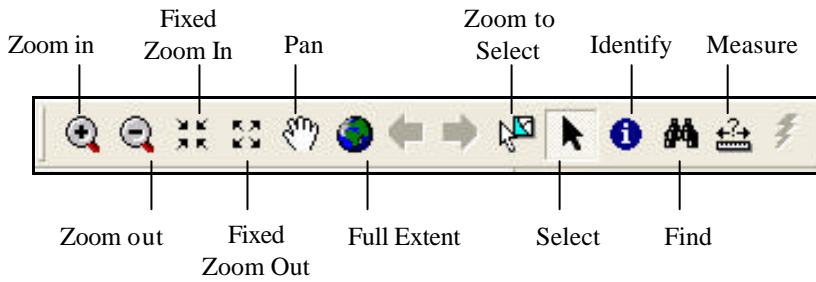
- Click the **Help** menu and click **ArcGIS Desktop Help**
- Click the **Contents (C)** tab
- Double-click a book to see a list of topics in that category
- Click the topic you want to read, e.g. Creating Maps



2. Standard:



3. Tools:





4. Draw Tool: used to add map elements



*Table of content*

It shows what layers the map contains and how the map presents the geographic features in those layers

*Map window*

Use 2 buttons **Data View**  and **Layout View**  or use **View** menu on the **Standard** toolbar to quickly switch between **Data View** and **Layout View**.

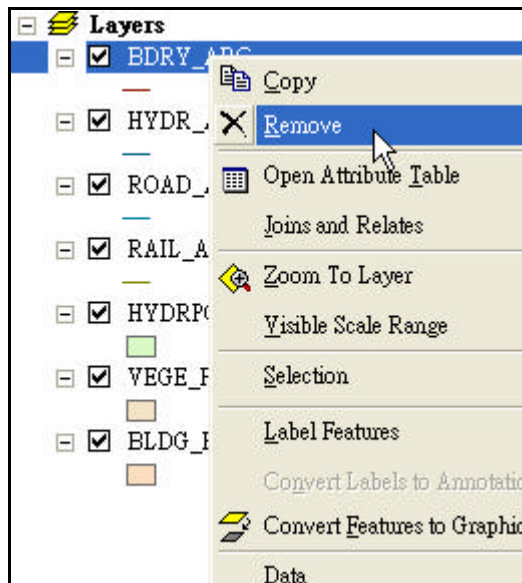
1. **Data View** is an all-purpose view for exploring, displaying, and querying the data on the map. But the view hides all the map elements on the layout, e.g. titles, North arrows.
2. **Layout View** is for laying out a map. In it, we can do almost everything in data view, plus design a map / arrange map elements.

## **Task 2: Learning about the basic mapping functions of ArcMap**

1. Open a map from the Startup dialog box
  - Start **ArcMap**
  - Click **A new empty map**
  - Click **OK**
  
2. Adding map layers
  - Click the **Add Data** button on the **Standard** toolbar
  - Navigate to the map folder
  - Selected all layers in **Add Data** dialog box
  - Click **Add**

*(Remark: Add place name and street name annotation from the folder  
C:\yuikee\COVERAGE\B20000\plac and C:\yuikee\COVERAGE\B20000\road)*

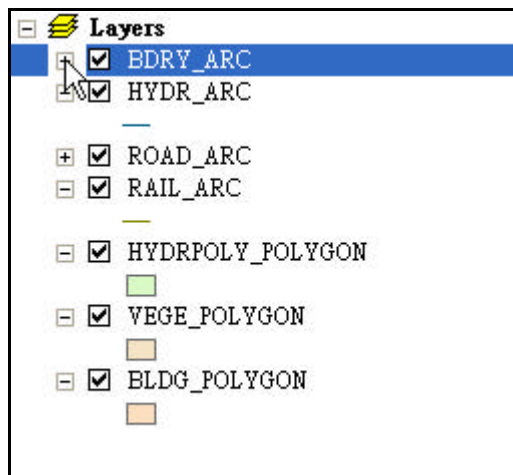
3. Removing map layers
  - In the TOC, right-click the layer you want to remove
  - Click **Remove**



*(Remarks: Remove all EXCEPT HYDR\_ARC, ROAD\_ARC, RAIL\_ARC, HYDRPOLY\_POLYGON, VEGE\_POLYGON & BLDG\_POLYGON)*

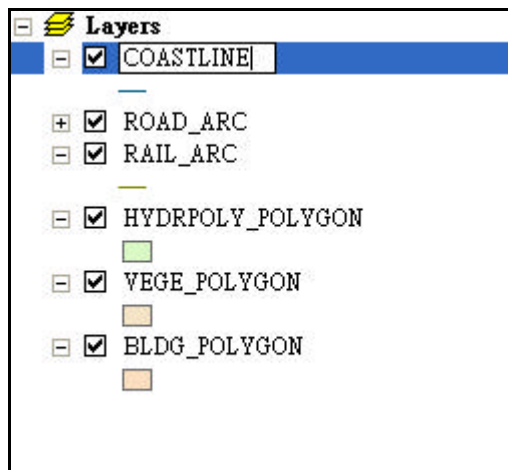
#### 4. Showing or hiding map symbol

- In the TOC, click the + and – sign to the left of the layer name to show and hide the layer symbol respectively



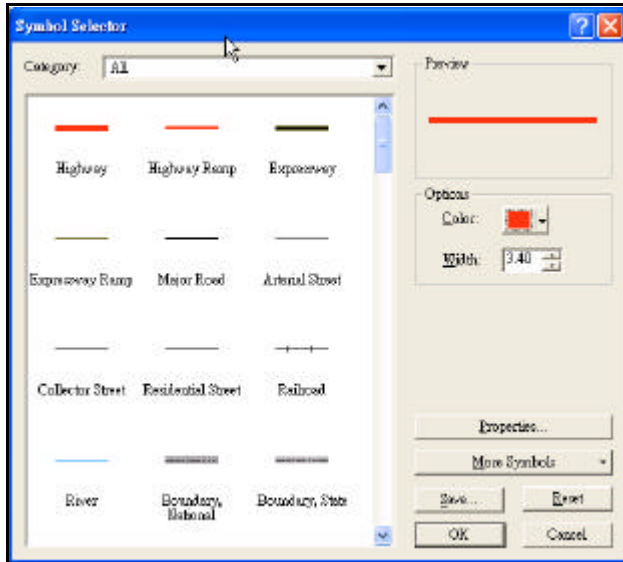
#### 5. Changing the name of a layer

- In the TOC, click the layer to select it
- Click again over the name
- Type the new name and press enter



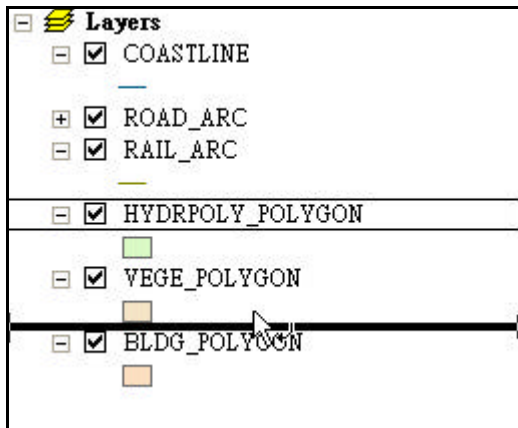
6. Changing the display symbol for the layer

- In the TOC, click the box on the left of the layer name to show symbol
- Click the symbol
- Select symbol in symbol selector interface



7. Changing the layer's drawing order

- In the TOC, click and drag the layer up or down
- Release the mouse pointer to drop the layer in its new position



8. Displaying a layer (turning on / off the map display)

- In the TOC, check the box next to the layer's name when you display a layer. But uncheck it when you turn the layer off.

9. Moving around the map on data view

Panning

- Click the **Pan** button on the **Tools** toolbar
- Move the mouse pointer over the map display

Zooming in or out

- Click and drag a rectangle defining the area you want to zoom in or out

Zooming in or out a fixed amount

- Move the mouse pointer over the map display
- Click once to zoom around a point

Zooming to the full extent of the data

- Click the Full Extent button

Zooming to a specific scale

- Type the appropriate scale in the scale bar

Moving back or forward one display

- Click the Back or Forward Extent buttons

10. Saving a map document


- Click the **Save** button on the **Standard** toolbar
- Enter **Lesson\_1** as the filename and select **ArcMap Document \*.mxd** as the file format.

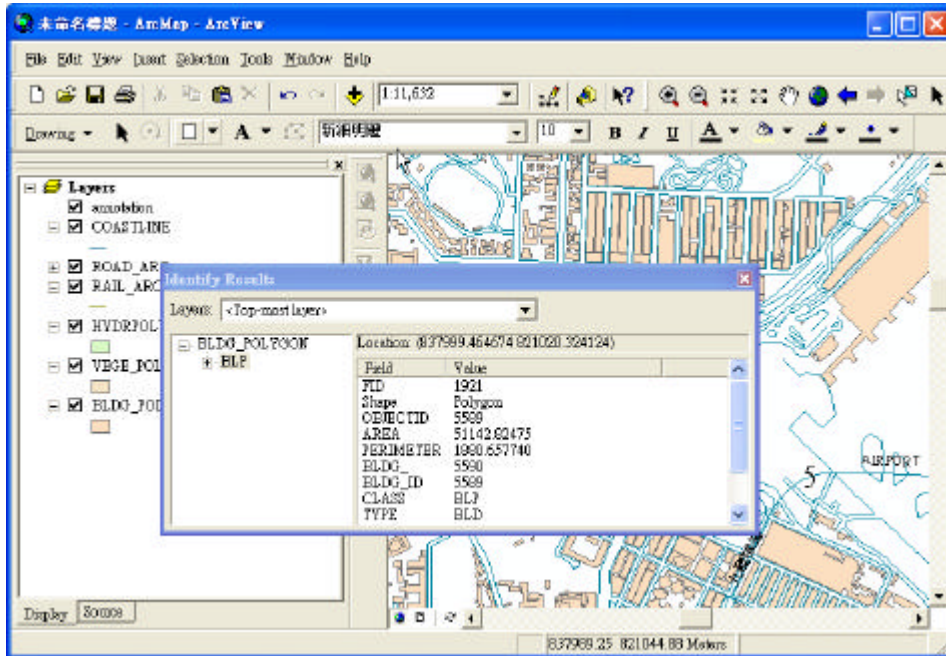
11. Existing map document

- Click the **File** menu and click **Exit**
- Click **Yes** to save any changes, **No** to discard any changes, or **Cancel** to continue working on your map

**Task 3: Exploring and query map data under ArcMap environment**

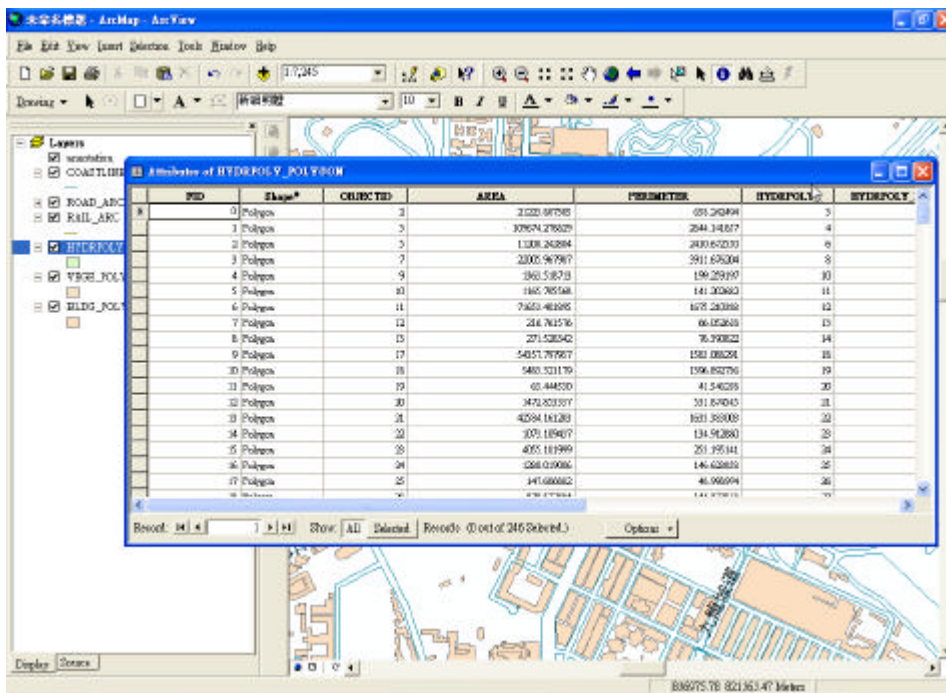
1. Identifying features by pointing at them

- Click the **Identify**  tool on the **Tools** toolbar
- Move the mouse pointer over the selected feature



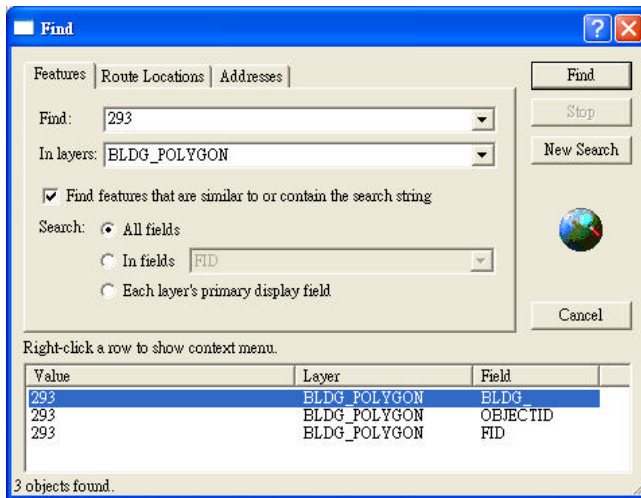
2. Viewing a layer's attribute table

- In the TOC, right-click the layer for which you want to display the attribute table
- Click **Open Attribute Table**

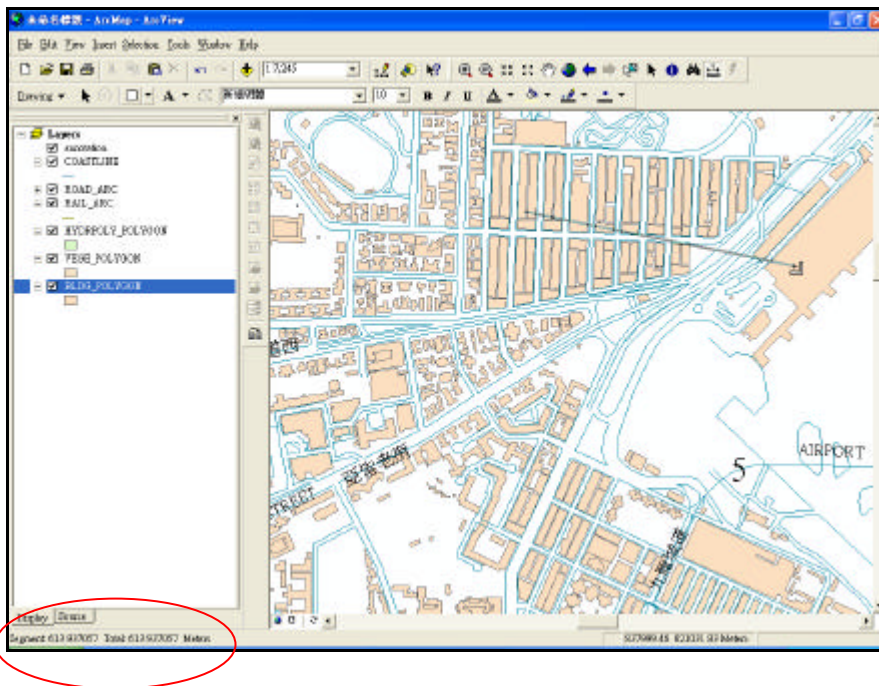




3. Finding features with particular attributes
  - Click the **Find** button on the **Tools** toolbar
  - Type the string you want to find in the **Find** dialog box



- Click the **In layers** dropdown arrow and click the layer you want to search
  - Uncheck **Find** features that are similar to or contain the search string if the string must match exactly
  - Search for the string in all fields, in a specific field, or in the primary display field
  - Click **Find**
4. Measuring distance
    - Click the Measure button on the Tools toolbar
    - Use the mouse pointer to draw a line representing the distance you want to measure. The line can have more than one line segment
    - Double-click to end the line



***Demonstrations and practice: Using GIS to teach map reading skills***

**Brainstorming exercise**

The list below is some basic map reading topics and skills you may have to teach at Secondary 1 level. For each, try to think about a teaching or learning activity which may make use of GIS:

| <b>Basic Map Skills/Topics</b>  | <b>Teaching/Learning /Activity</b> |
|---------------------------------|------------------------------------|
| <b>Scale</b>                    |                                    |
| <b>Maps of different scales</b> |                                    |
| <b>Direction</b>                |                                    |
| <b>Conventional signs</b>       |                                    |
| <b>Legend</b>                   |                                    |
| <b>Location of places</b>       |                                    |
|                                 | <b>global scale</b>                |
|                                 | <b>continental scale</b>           |
|                                 | <b>regional scale</b>              |
|                                 | <b>local scale</b>                 |
| <b>Grid reference</b>           |                                    |
| <b>Measuring distance</b>       |                                    |
| <b>Planning of a route</b>      |                                    |

**Creating your own step-by-step manual**

*Exercise 1*

**Suppose you are teaching your S1 students the concept of large-scale and small-scale maps. Work out a detailed step-by-step manual for yourself and for your students:**

**1. Switch on your computer.**

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

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*Exercise 2*

**Suppose you are teaching your S1 students how to measure linear distances on maps. Work out a detailed step-by-step manual for yourself and for your students:**

**1. Switch on your computer.**

**2.** \_\_\_\_\_

**3.** \_\_\_\_\_

**4.** \_\_\_\_\_

**5.** \_\_\_\_\_

**6.** \_\_\_\_\_

**7.** \_\_\_\_\_

**8.** \_\_\_\_\_

**9.** \_\_\_\_\_

**10.** \_\_\_\_\_

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*Exercise 3*

The map below was worked out by a S1 student. It shows his journey to school from the MTR station nearby.



How did you come to this learning centre to attend this GIS course? You can make your own map to show your route of journey. Work out a detailed step-by-step manual for yourself. You will find it helpful for your students:

1. Switch on your computer.
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_

