

Name: \_\_\_\_\_

**Crandall University  
GEOGRAPHY 1013**

**Lab 2: The "Tools of the Trade," Part II**  
*Map Coordinate Systems and Symbols*

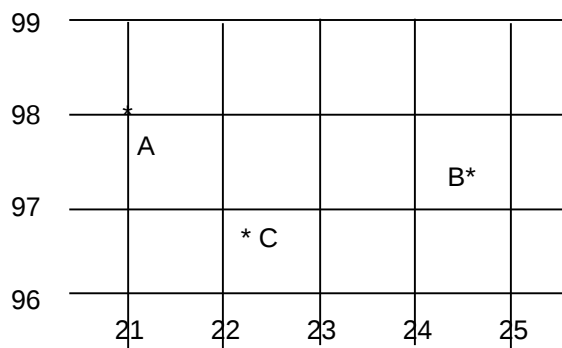
**Print this lab off. Complete it. And then scan/photo it and send it as ONE PDF document through Canvas. Please do send it as ONE PDF document with the pages in order. Before you send it, make sure it is legible. If you cannot read it, neither can I 😊**

Mapmakers (cartographers) use a variety of "techniques" and "tricks" to make maps more usable, and to represent a lot of information simply and clearly. Today's lab focuses on the methods cartographers use to locate places or features easily (coordinate systems) and to represent features clearly (symbols).

**A. Coordinate Systems**

To make maps useful we need a simple method to locate places quickly and easily ... so we use coordinate systems (or grid systems). Many of us are familiar with this type of system because most city maps use the familiar "Battleship" or "Bingo" coordinate system (e.g. "G7", where letters are used on the vertical axis and numbers on the horizontal axis, or vice versa). More technical maps tend to be part of a much larger grid (e.g. in Canada, the NTS - National Topographic System).

The Canadian **National Topographic System** uses the **Universal Transverse Mercator Grid** system (U.T.M.). This was developed as a military coordinate system and is used internationally. On individual map sheets, features are located by a six number code; the first three are always the "**easting**" (east-west or horizontal value); the second three are always the "**northing**" (north-south or vertical value). The first two numbers are given by the blue grid lines on the map. The third number is **estimated** imagining tenths between the blue grid lines.



A: easting 21\_0\_ northing: 98\_0\_ It would be written: 210980

B: 246974 (the "6" and the "4" are estimates)

C: 223968 (the "3" and the "8" are estimates)

**\*\*\*NOTE: The first three numbers are always the easting (side-to-side);  
the last three the northing (top-to-bottom)**

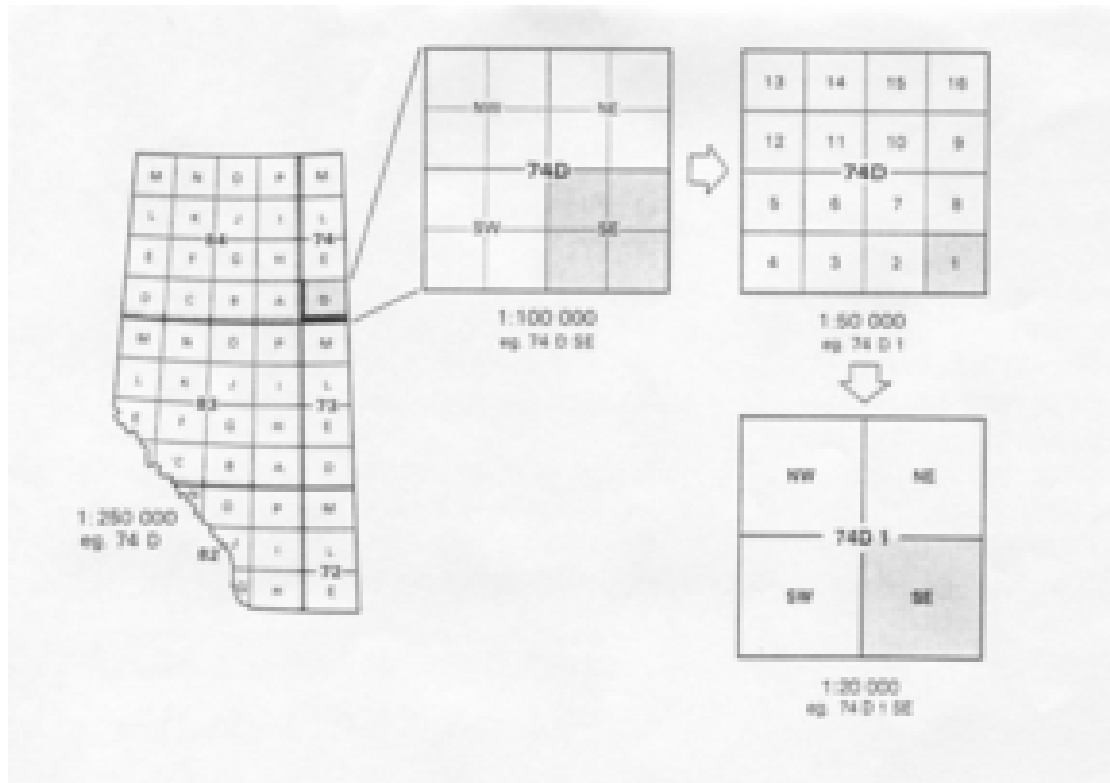
**MORE INFORMATION ON THE NATIONAL TOPGRAPHIC SYSTEM GRID ...** In the NTS system, Canada is divided into large numbered quadrangles, 4° latitude by 8° longitude, called **primary blocks**. 1:50 000 NTS maps (which we use in this course) have this number as the first part of their descriptive number (e.g. 21 H/16 or 83 C/3).

Virtually all of New Brunswick is in primary block 21.

Each primary block is subdivided into 16 (8 x 8) smaller blocks/quadrangles, lettered A – P (beginning in the lower, right-hand corner). All of these smaller blocks are available in 1:250 000 scale maps (1 cm on the map is 2.5 km on the ground). These letters are also included in 1:50 000 map numbers (e.g. 21 H/16 or 83 C/3). (1:250 000 blocks can be subdivided into 1:100 000 blocks, but we will not be using this scale in this course)

These 1:250 000 blocks can be subdivided into 16 segments, numbered 1-16 (beginning in the lower, right-hand corner). These are mapped for all of Canada at a scale of 1:50 000 (1 cm on the map is 0.5 km on the ground). 1:50 000 maps are also described using these numbers (e.g. 21 H/16 or 83 C/3). **\*\*\*On the right hand side of each map is a graphic showing the numbers of adjoining maps.**

1:50 000 scale maps can be subdivided into 4 parts for 1:20 000 scale maps.



For our purposes:

Primary Blocks: e.g. **74**, **21**, or **83**

Secondary Blocks (1:250 000): e.g. **74 D**, **21 H**, **83 C**

Tertiary Blocks (1:50 000): e.g. **74 D/1**, **21 H/1**, **83 C/3**

## Exercises

The two maps we will be using are located in the University Library. **Alternatively, PDF versions of the maps you can access are online (link on the Labs home page)**

**There is also a link to the symbols used on these maps on the Labs home page, too**

1. From 83 C/3, to view terrain directly NORTH (up), what map would you need? \_\_\_\_\_  
(look at the legend on the side of the map)
2. From 83 C/3, to view terrain directly EAST (right), what map would you need? \_\_\_\_\_

3. On 83 C/3, what is the name of the glacier located at 840633? \_\_\_\_\_
4. On 83 C/3, what is the name of the mountain located at 775656? \_\_\_\_\_
5. On 83 C/3, what is located at 828657? \_\_\_\_\_
6. On 83 C/3, what is located at 965810? \_\_\_\_\_
7. On the same map, give the easting and northing for the following:
  - a. The lowest (bottom-most) "lookout" on Highway 93 (near the right edge, the small circle) \_\_\_\_\_
  - b. Castleguard Mountain (a peak in the centre at the top of the map): \_\_\_\_\_

### B. Symbols

In order to represent features on the earth's surface clearly and simply cartographers (mapmakers) use a variety of symbols. On the back of each NTS map is a detailed key to the symbols used. Most are easily recognizable ... some a little more challenging.

1. One of the main symbols used is colour. Colours are used to indicate surface type and cover. Using your **common sense** (no, it's not written anywhere ... THINK!!! ... they're supposed to be common sense) and looking at the legend on the back of your map, determine what these colours represent:
 

The blue represents: \_\_\_\_\_

The green represents: \_\_\_\_\_

The pink represents: \_\_\_\_\_
2. Using the symbols on the back of your map, identify the feature located at the following UTM references on **NTS 21 H/16 (Amherst)** ...
 

|                       |                                   |
|-----------------------|-----------------------------------|
| a. 128775 ('C') _____ | f. 935836 (oval) _____            |
| b. 938850 _____       | g. 979885 _____                   |
| c. 088778 _____       | h. 058745 (building with +) _____ |
| d. 997798 _____       | i. 059776 (2 of them) _____       |
| e. 052739 ("H") _____ | j. 160690 _____                   |
3. What runs from 153669 to 839949? \_\_\_\_\_
4. What runs from 030670 to 836820? \_\_\_\_\_

5. Looking at the symbols, what two dominant landscape features might you see along the shoreline at the mouth of the Tantramar River (east of Sackville, NB) at low tide ...
- a. What do the black dots represent? \_\_\_\_\_
- b. What do the blue tufty-things represent (Ram Pasture Marsh)? \_\_\_\_\_
6. What landscape features might you see at Black Point (890715) ... what do the black cloud-like puffs represent? \_\_\_\_\_
7. What is landscape like around 065850? \_\_\_\_\_
8. On **NTS 83 C/3 (Columbia Icefield)** ...
- a. What feature is located from 705810-740790? \_\_\_\_\_
- b. What does the symbol at 880852 represent? \_\_\_\_\_
- c. What symbol is used for the Nigel Creek trail (starting at 953817)? \_\_\_\_\_
- d. What do all the little brown dots in the streambed of the Athabasca River (top right corner) mean?

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