

## Coordinates Lab

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

Fall 2011

To receive full marks, be sure to follow these directions:

- **Show all calculations** and be sure to include **units**. Simply providing a final answer will not yield full marks. Also, lat./long. require “direction” (i.e.  $49^\circ$  is insufficient,  $49^\circ$  N is a complete answer). Similarly UTM coordinates require E and N designations (i.e. 5,600,200m N)
- For decimal degrees, dd.ddd denotes 3 decimal places required
- Take care - map measures should be made to the **nearest 0.5 mm** (0.05cm).
- Do **not** round during calculations, but present final answers to the nearest unit requested (e.g. degrees, minutes, metres, etc.).
- Underline your final answer.
- **Neatness** will be a consideration in marking.

**Refer to the BC Topographic (BCGS) map sheet 092F030 (Nanoose Harbour)**

Note that the grid denotes the UTM grid. Along the neatline at the end of the grid lines the gray numbers (blue on the original) denote eastings and northings in metres. The black tics (and black lines) within the map denote latitude and longitude in degrees / minutes / seconds.

Note that the UTM grid is ‘tilted’ in relation to latitude & longitude. When you interpolate coordinates be sure to align your marking with the proper grid (i.e. for UTM align along with the grid whereas; for latitude/longitude be sure to align with the tics).

1. What are the latitude & longitude coordinates (nearest second) for the junction of the stream and Long Lake (located at the west end of the lake).

2. What are the UTM coordinates (nearest 10 metres) for the same location as the previous question.

**Refer to the NTS map sheet 92 F/10 Comox Edition 3.**

Note that the grid denotes the UTM grid. Along the neatline at the end of the grid lines the light gray numbers (blue on the original) denote eastings and northings in metres. The black bars on the neatline denote latitude and longitude in degrees and minutes. The neatline itself is defined by latitude and longitude.

When you interpolate UTM coordinates be sure to align your marking with the grid. However, note that the UTM grid is 'tilted' in relation to the neatline. When you interpolate lat/long coordinates you will note there are no "tics" inside the map - instead use a "square" to mark the location on the neatline.

Note the datum.

3. Determine the latitude & longitude coordinates (nearest second) for the navigation beacon (denoted with a star) on Flora Islet.

4. Determine the UTM coordinates (nearest 10 metres) for the navigation beacon (denoted with a star) on Flora Islet - not much in the way of calculations are required.

**Refer to the NTS map sheet 92 F/10 Comox Edition 5**

5. Determine the latitude & longitude coordinates (nearest second) for the navigation beacon (denoted with a star) on Flora Islet.

6. Determine the UTM coordinates (nearest 10 metres) for the navigation beacon (denoted with a star) on Flora Islet.

7. Compare the answers for questions 4 & 6. What is the difference between the two northings? ... between the two eastings? What is the “*straight line difference*” between the two datums?

**Refer to the BCGS Index map (92G).**

Note that the grid denotes neatlines for map sheets in the BCGS series down to a scale of 1: 5,000. The markings on the neatline indicate latitude & longitude in degrees / minutes.

8. A 1:10,000 map sheet measures how many minutes in latitude (i.e. how tall is it)?  
... in longitude (how wide)?
  
  
  
  
  
  
  
  
  
  
9. The neatline for map sheet 92G.012 is bound by what latitudes and longitudes?

10. The neatline for map sheet 92G.012.3.4 is bound by what latitudes and longitudes?

11. White Islets are located in map sheet 92G.042. What is the latitude & longitude (to the nearest  $1/10^{\text{th}}$  of a minute) of the islet? Be sure to measure to the centre of the island.

12. Convert the coordinates to decimal degrees (dd.ddd).