

GEOG 226 Spatial Data
Photo Scale and Horizontal Distance

Name: _____

Show all calculations in a neat fashion and include units.

Handy Conversions (calculate to 2 decimal places):

1 metre = _____ feet useful for converting altitudes & elevations

1 foot = _____ cm useful for determining accurate focal lengths

We will assume the focal lengths are “exactly” 12 or 6 inches, therefore:

30BCCxxxx really means 12” = ____ . ____ cm (2 decimal places)

15BCCxxxx really means 6” = ____ . ____ cm (2 decimal places)

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- 1) Refer to photo 15BC77114 – 082. The altitude is provided on the gauge along the margin (it reads 5840m).
- a) What is the scale of the photo along the sea shore?
 - b) What is the scale on a hillside that has an elevation of 400m?

- 2) Refer to photo 24107. Note the information printed on the photo is in a different format than government photos. Determine the distance (nearest metre) between the two circles marked on the photo (be sure to use the 'dead centre of the circles). Assume an elevation of 250m in this portion of the photo.

- 3) A distance of 10.5 cm is measured between two road intersections on a photograph for which the focal length is 12 inches. The distance between the same two features on a 1: 20,000 map is 7.8 cm.
- Determine the scale of the photo.
 - Determine the flying height (in feet and metres).
 - Given the flying altitude was 19,400ft, determine the elevation of the ground (metres)

4) Determine the scale of air photo 15BC80058 – 057. Suggestion – measure the distance between features that occur near the shoreline (to ensure scale is consistent and not affected by a difference in elevation).

5) Was the plane that took photo 30BCC207 – 0091 flying higher or lower than the plane that took photo 15BC80058 – 057? By how many metres?

- 6) Your aunt owns a woodlot and wished to have air photos taken. The ground elevation varies from 200m – 530m. Assume the focal length on the camera is 12 inches.
- a) Determine the altitude (nearest foot) the plane should fly at to attain an average scale of 1: 10,000.
 - b) Determine the largest and smallest photo scales that will be attained if the plane flies at the fixed altitude determined in the previous question.