

Name: Key

FO-4313/6313
Second Hour Exam, 2008

Formulae:

$$RF = \frac{1}{S} = \frac{d}{D} = \frac{f}{(H-h)}$$

1. Scale is defined as: a ratio of image distance to ground distance (10)

The two primary characteristics of an RF are:

a. Unitless (5)

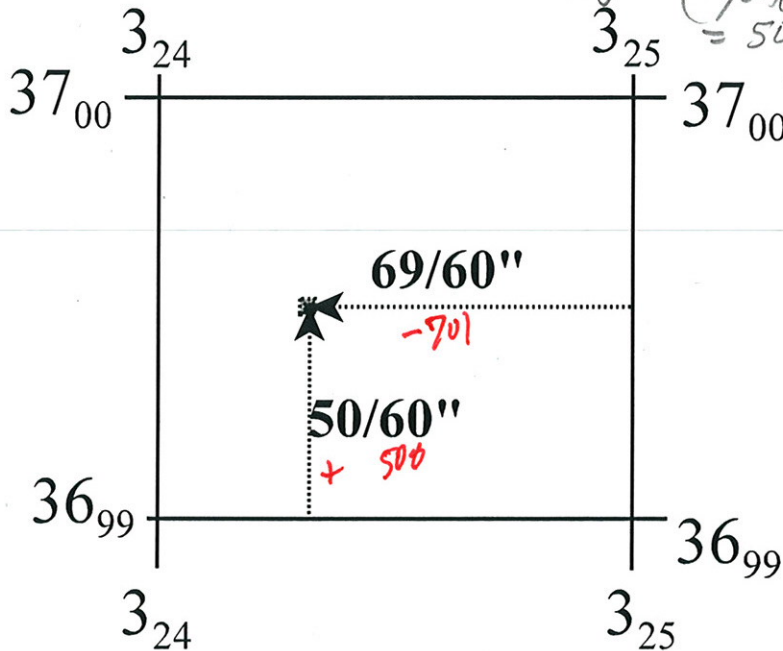
b. 1 in numerator (5)

2. The UTM coordinates of a point located on a 7.5' quadrangle sheet (scale 1:24,000), as depicted below, are calculated as:

$$1:24,000 \rightarrow 1'' = 24,000'' \times 2.54/100 = 609.6 \text{ m} \quad (10)$$

$$\Delta X = (69/60)(609.6) = 701 \text{ m} \quad (10)$$

$$\Delta Y = (50/60)(609.6) = 508 \text{ m}$$



$$\begin{array}{r} 325,000 \\ - 701 \\ \hline 324,299 \text{ m E} \end{array}$$

$$\begin{array}{r} 3,699,000 \\ + 508 \\ \hline 3,699,508 \text{ m N} \end{array}$$

Name: Key

3. A G.I.S is defined as: an information system with data referenced to geographic coordinates. (5)

4. A G.I.S. contains two(2) types of data: spatial and attribute (4)

5. The two types of spatial GIS data are: vector and raster (4)

6. Topology in a GIS is: relationships between spatial features. (5)

7. If, the desired scale of a photo mission is 1:18,000 for a 9 by 9 inch format size with specifications of 60% stereoscopic overlap, 25% sidelap, and 30% overhang allowance:

$$1:18000 = 1'' = 1500 \text{ ft.}$$

a. The format size in ground distance units would be: 13,500 ft by 13,500 ft (6)

$$9 \times 1500$$

b. The acreage covered by one photo is 4,103.88 acres. $\frac{(13,500)^2}{43,560}$ (6)

c. In order to obtain 60% **endlap**, the distance between photo centers (on each flight line) should be 5,400 ft. $(1 - .6) 13,500$ (5)

d. In order to obtain a 20% photo (safety) **overhang** outside the target area boundary, the first and last flight lines should be located 4,050 ft. inside the area boundary. $(5 - .2) = .3 (13,500)$ (5)

e. In order to obtain a 25% **sidelap**, interior flight lines (except for first and last) should be spaced a maximum of 10,125 ft. apart. $(1 - .25) 13,500$ (5)

8. A GPS receiver uses trilateration (computation procedure) to compute position. (5)

9. Error is expressed for a GPS location in terms of: PDOP (5)

10. If you use a dot grid with a density of 64 dots/in² on a photographic scale of 1:15,840, each dot represents 0.625 acres. (5)

$$1:15840 \Rightarrow 1'' = 1,320 \text{ ft} = 20 \text{ chain}$$

$$1^2 = 400 \text{ sq ch} = 40 \text{ acres.}$$

$$40/64 = 0.625 \text{ ac/dot}$$