GIS-E1020 From Measurements to Maps

Examination 26.10.2016 (You can answer also in Finnish)

1.
   a. Give some examples of "datum inheritance". (3 p)
   b. Describe setting-out measurements for buildings. Who orders them, who do them, procedures? (3 p)

2. Why some generalization has to be done when making a map? What are the basic generalization operations? (6 p)

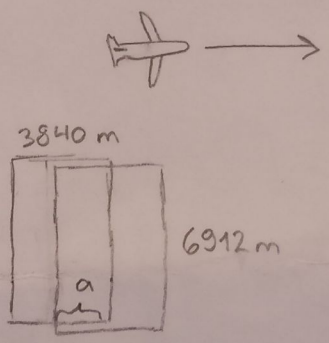
3. The table contains necessary data for planning of aerial photography. Calculate following missing values of
   a) flying height in case of GSD 0,5 m, (2 p)
   b) image base with forward overlap of 60 %, and (2 p)
   c) strip interval with side overlap of 30 %. (2 p)

Camera type	Z/I DMC
Number of pixels, cross direction	13824
Number of pixels, flight direction	7680
Pixel size (micron)	12
Frame size, cross direction (mm)	166
Frame size, flight direction (mm)	92
Field of view, cross direction (°)	69,4
Field of view, flight direction (°)	42,0
Focal length (mm)	120
GSD Ground sampling distance (m)	0,5
Flying height (m) for GSD of 0,5 m	
Image sensor foot print, cross direction (m)	6912
Image sensor foot print, flight direction (m)	3840
Forward overlap (%)	60
Image base (m) with forward overlap of 60 %	
Side overlap (%)	30
Strip interval (m) with side overlap of 30 %	

a) $\frac{FH}{c} = \frac{GSD}{px}$

$\rightarrow FH = c \cdot \frac{GSD}{px}$

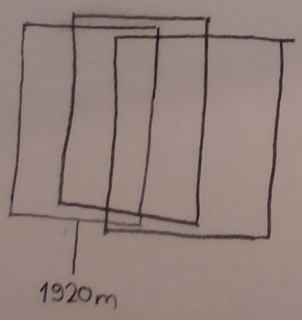
b)



$a = 0{,}6 \cdot 3840\ m$
$= 2304\ m$

4. Define the four resolutions of remote sensing data sets. (6 p)

5. Tell about error sources of airborne laser scanning. (6 p)



- range ΔR
- mirror $\Delta\beta$
- position ΔX ΔY ΔZ
- attitude $\Delta\varphi$ $\Delta\omega$ $\Delta\kappa$
- integrated