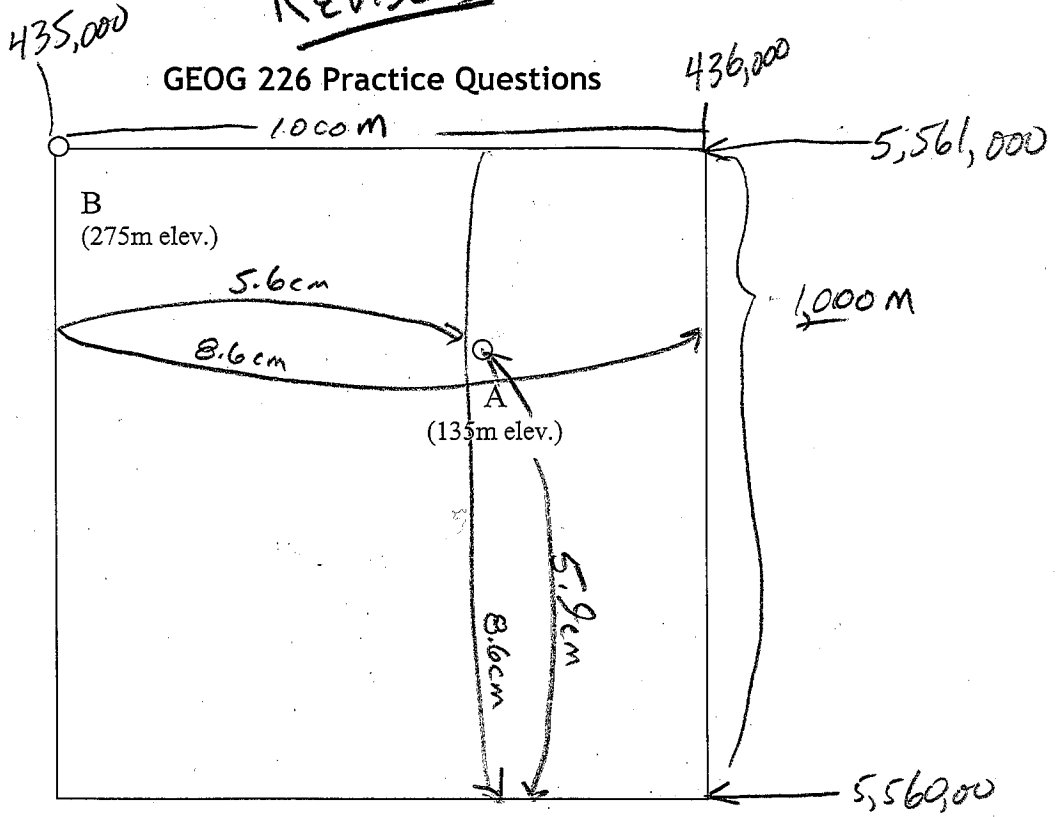
REVISED

GEOG 226 Practice Questions



oops, it was 1000m not 100m (doh!)

1) Refer to the map above and interpolate the UTM coordinate (nearest m) for point A. Lines: N = 5,561,000m; S = 5,560,000m; W = 435,000m; E = 436,000m

① label lines and calculate distance btwn UTM grid (i.e. 100m grid)

② measure map distances (marked above)

③ Interpolate:

EASTING

$$\frac{5.6\text{cm}}{8.6\text{cm}} = \frac{x}{100\text{m}}$$

$x = 650\text{m}$

EASTING = 435,650m

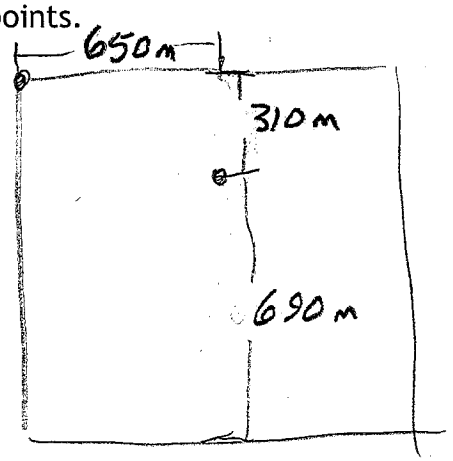
NORTHING

$$\frac{5.9\text{cm}}{8.6\text{cm}} = \frac{x}{1000\text{m}}$$

$x = 686 \approx 690\text{m}$

NORTHING = 5,560,690m

2) Based on the UTM coordinates calculate the distance between the 2 points.



$a^2 + b^2 = c^2$

$650^2 + 310^2 = c^2$

720m C=

3) What is the scale of the map above?

Scale ...  $= \frac{MAP}{RW}$

$= \frac{8.6\,cm}{1000\,m}$

$= \frac{8.6\,cm}{100000\,cm} = \frac{1}{xxx}$

Scale 1:11,628

4) What is the slope in % and in degrees between points A & B?

$Slope = \frac{rise}{run} = \frac{275-135\,m}{720\,m}$

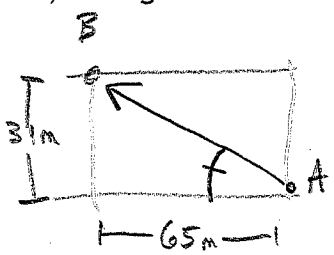
720 m ← from Question 2

$= \frac{140\,m}{720\,m} = 0.19$

ARCTAN

19% → 11°

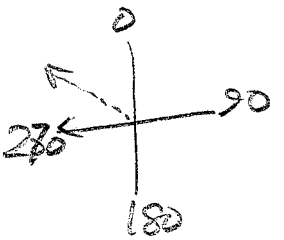
5) Using the UTM coordinates, calculate the bearing between points A & B?



$\frac{310\,m}{650\,m} = 0.477$

ARCTAN

25°



270+25

295°

6) Express 1" = ½ mile as a representative fraction

63360 inches = 1 mile

31,680 = ½ mile

1 : 31,680

7) 4 inches on a map corresponds to 3.6 km on the ground. What is the map scale?

$\frac{4 \text{ inches}}{3.6 \text{ km}} \xrightarrow{*2.54} \frac{10.2 \text{ cm}}{360{,}000 \text{ cm}} = \frac{1}{X}$

3.6 km → 3,600 m

1 : 35,294

8) You have a 1:20,000 map and a photo with an unknown scale. The distance between 2 features is 4.5cm on the map and 3.85 cm on the photo. What is the scale of the photo? MAN, I'm getting tired of these #?₹* questions.

① DISTANCE from stupid map.

$\frac{1}{20{,}000} = \frac{4.5 \text{ cm}}{\text{who the hell cares}}$ who the hell cares = 90,000 cm

② SCALE of PHOTO

$\frac{3.85 \text{ cm}}{90{,}000} = \frac{1}{\text{stupid scale}}$

stupid scale = 1 : 23,377

9) Slope distance between two points is 95m; slope is 65%. Determine the HD and elevation change between the two points. What would the "plotting distance" be (nearest 0.1cm) for a 1:5,000 map?

① well... (sigh)... $HD = SD * \cos(\text{slope}^\circ)$

② so I need slope° ... remember slope ratio $\xrightarrow{\text{Arctan}}$ slope degrees

③ 65% = 0.65 $\xrightarrow{\text{ARCTAN}}$ 33°

(65 = percent, 0.65 = ratio)

④ $HD = 95 * \cos(33^\circ) = 95_m * 0.838 = \underline{79.7m} = HD$

Plotting distance for 1:5,000 map.

$$\frac{1}{5{,}000} = \frac{X\,cm}{7970cm}$$

$$X = 1.6\,cm$$

10) What is the scale for a photo with f = 15cm and H = 18,000ft?

who the f cares?

f = 15cm = 6 inches (for practical purposes for air photos)

$$\frac{\frac{1}{2}\,ft}{18{,}000\,ft} = \frac{?}{?}$$

1:36,000

11) Determine the altitude for the plane to obtain 1: 10,000 scale photos with 305mm lens. Assume a ground elevation of 320m.

1 ft.

① $\frac{f}{H} = \frac{1}{10{,}000}$ $H = 10{,}000\ ft$

② $A = H + E$

$= 10{,}000\ ft + 320m$

$\downarrow *3.28$

$= 10{,}000\ ft + 1{,}050\ ft$

$= 11{,}050\ ft$

12) You have a 1:10,000 contour map with a 25m contour interval. You need to plot a trail (grade line) at 10%. Calculate the "contour spacing" you would use to plot the trail.

10%

↓

$\frac{10}{100} = \frac{25m}{X\ m}$ $X = 250m$ real world distance

$\frac{1}{10{,}000} = \frac{map\ cm}{25000\ cm}$

$map = 2.5\ cm$