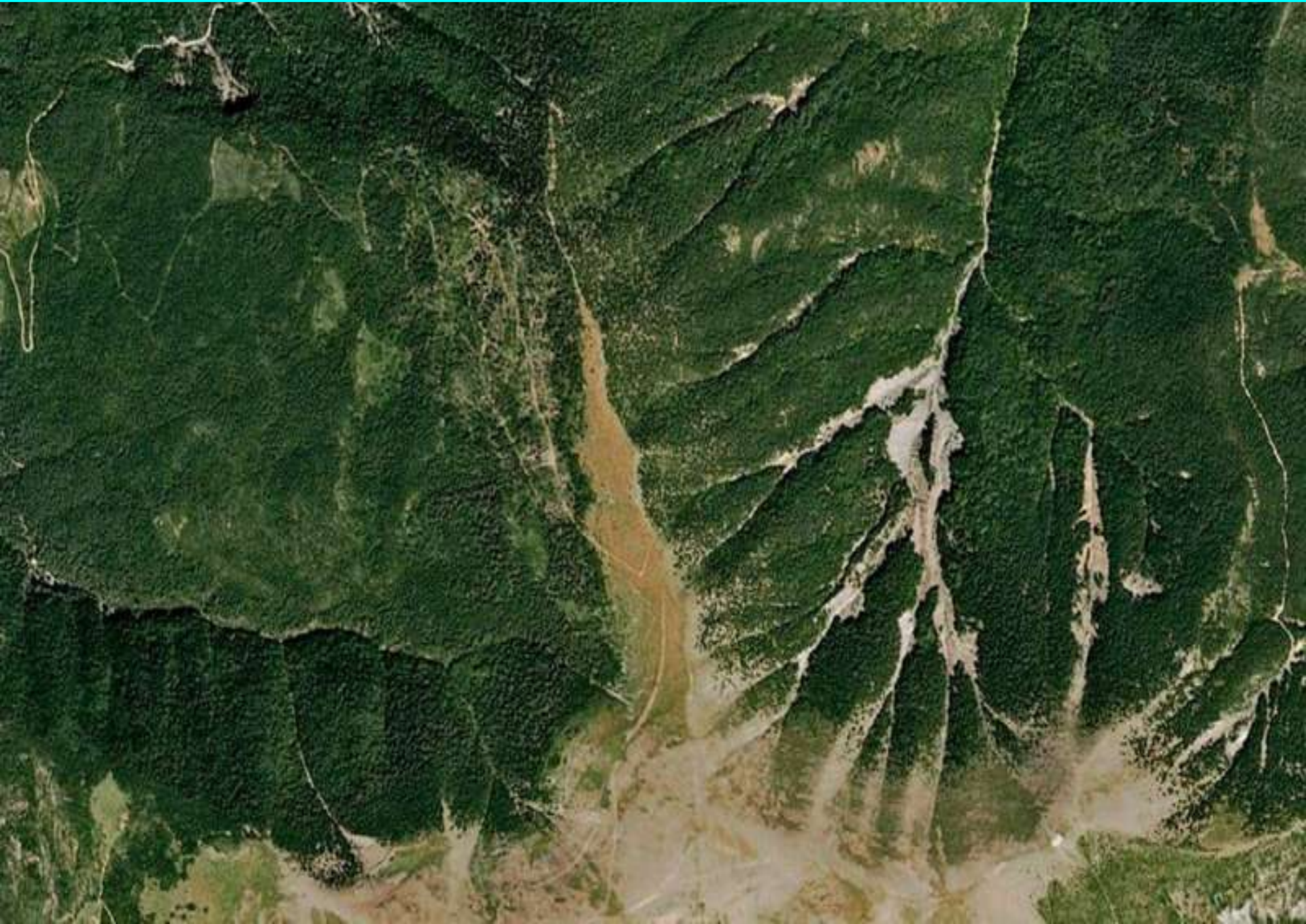


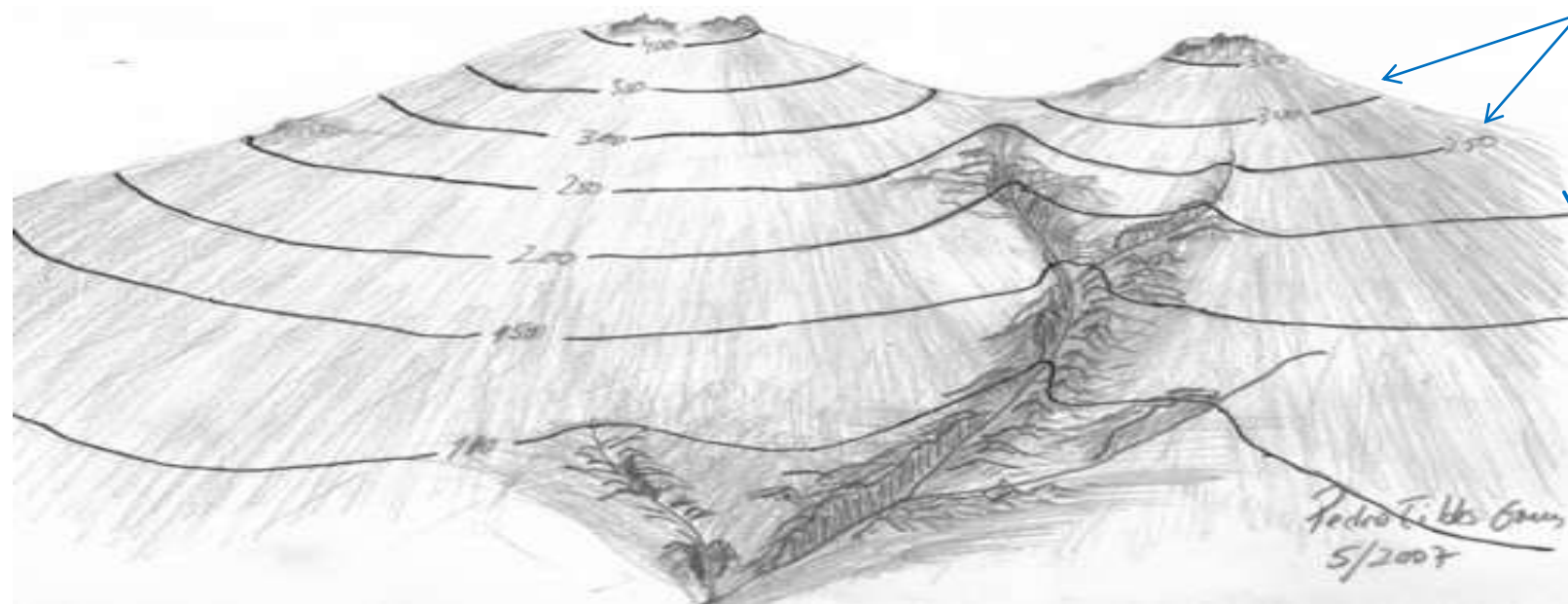
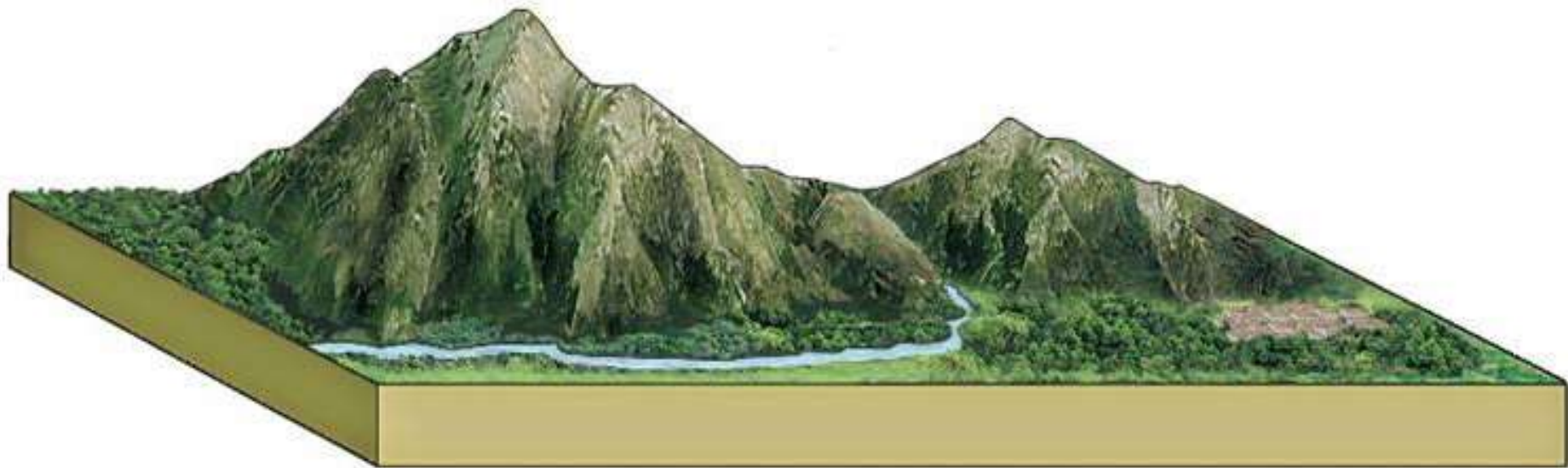


MAPAS TOPOGRÁFICOS

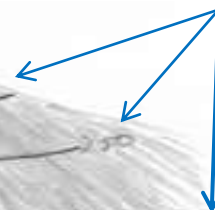
¿CÓMO PLASMAR EL RELIEVE EN UN MAPA?



¿CÓMO PLASMAR EL RELIEVE EN UN MAPA?



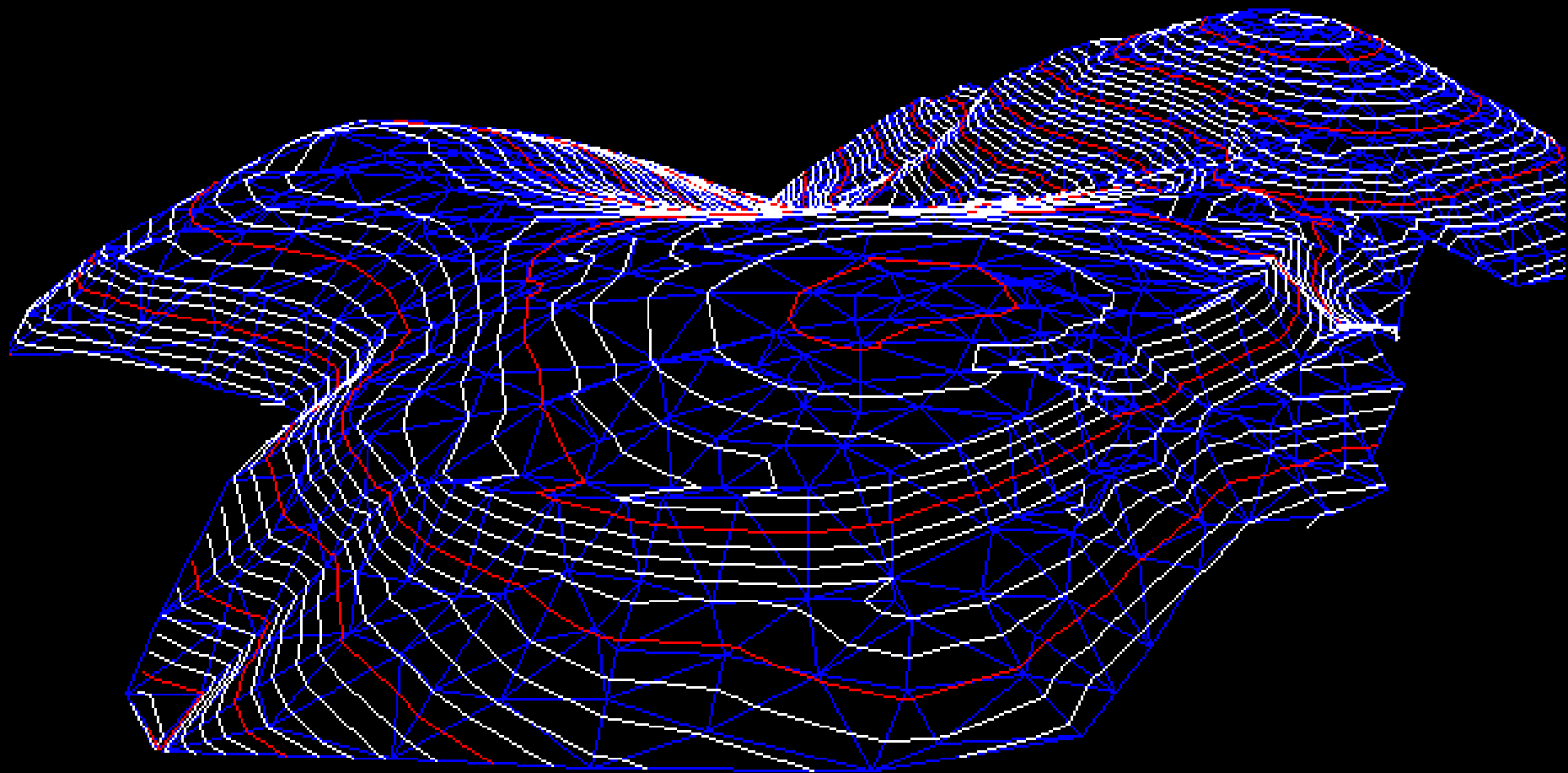
Curvas de nivel



CURVAS DE NIVEL



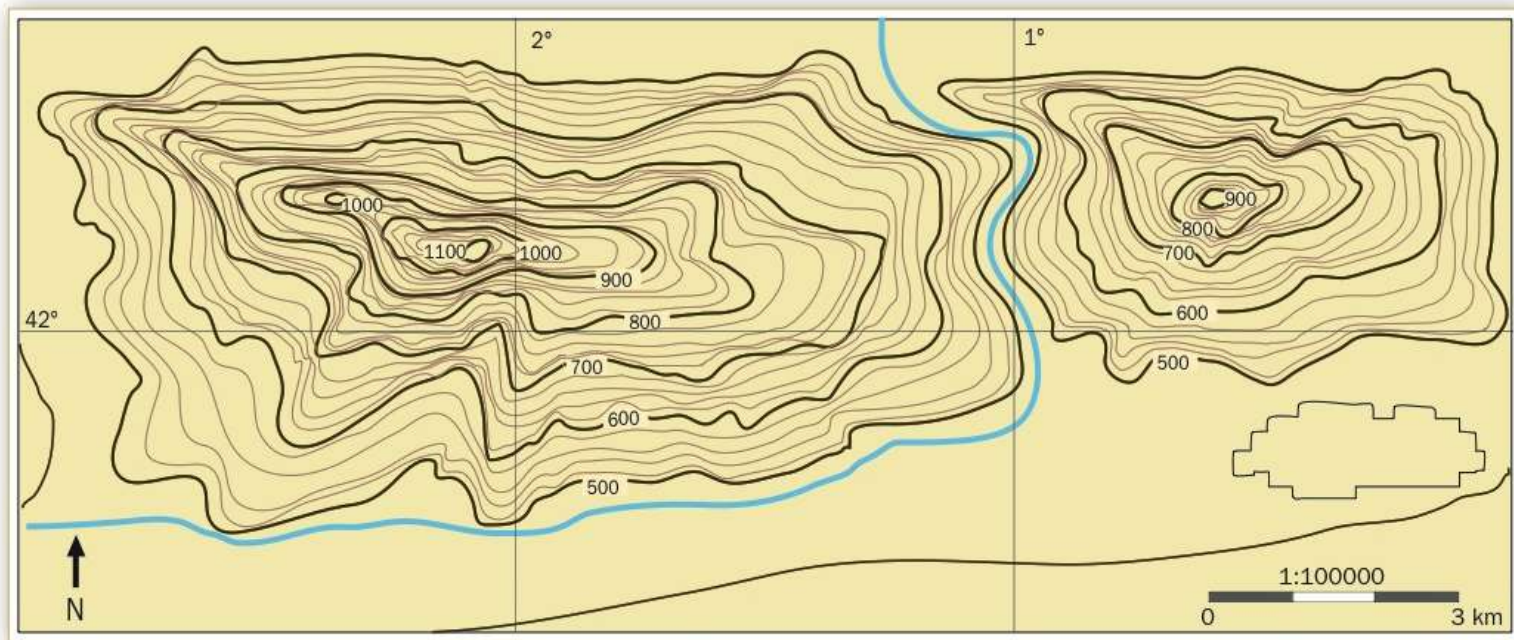
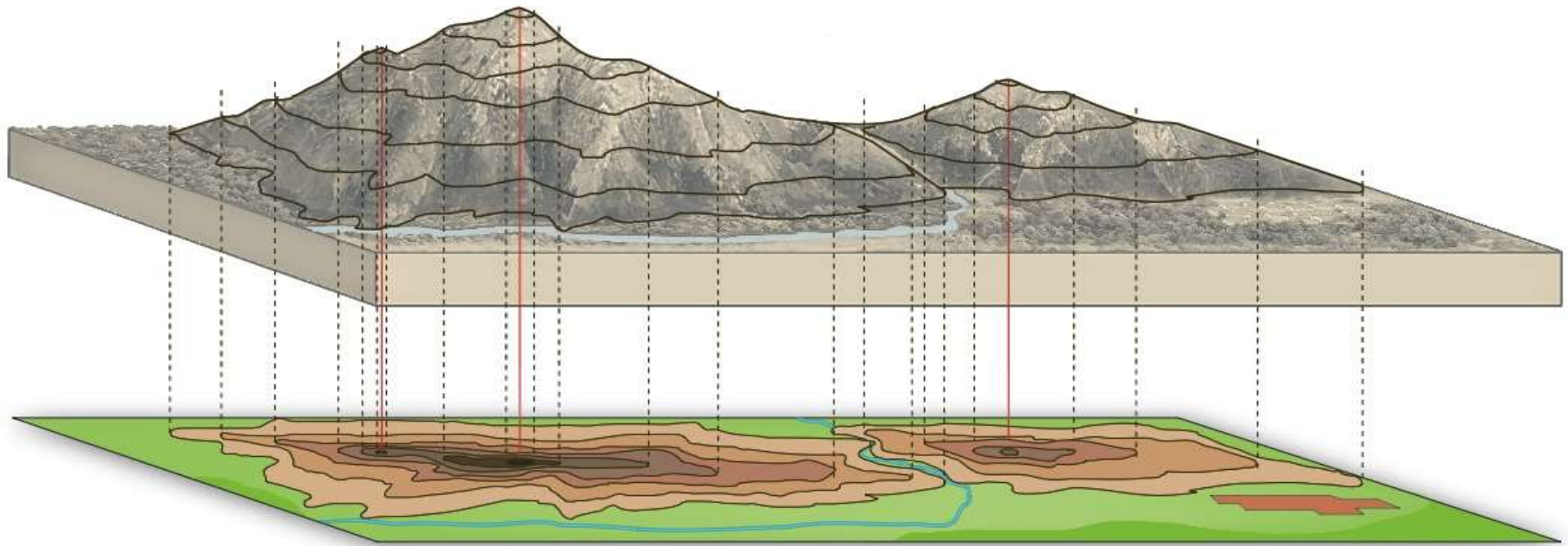
CURVAS DE NIVEL. MODELO INFORMÁTICO



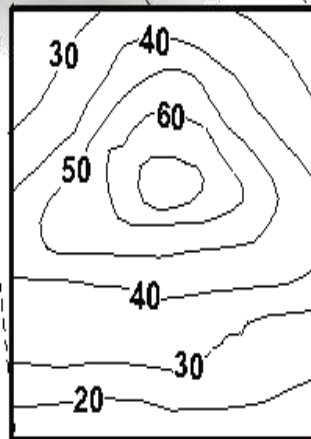
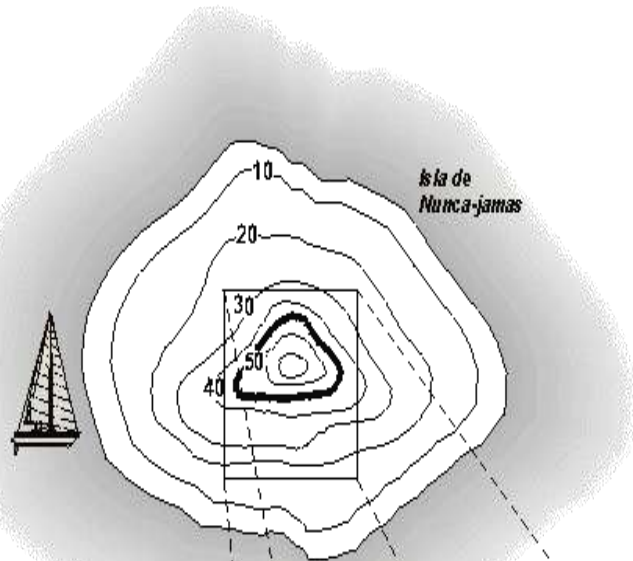
LOS BANCALES SIGUEN CURVAS DE NIVEL



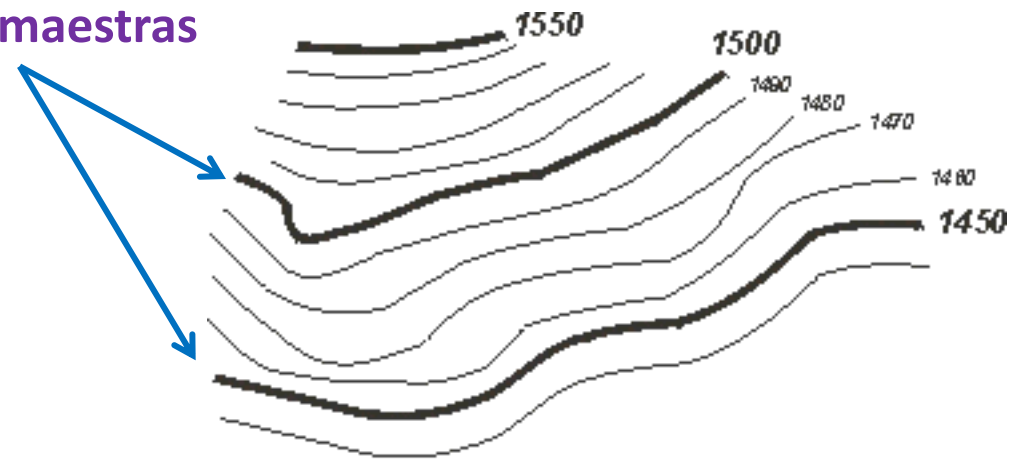
PROYECCIÓN SOBRE UN PLANO DE LAS CURVAS DE NIVEL



PROYECCIÓN SOBRE UN PLANO DE LAS CURVAS DE NIVEL



Curvas maestras



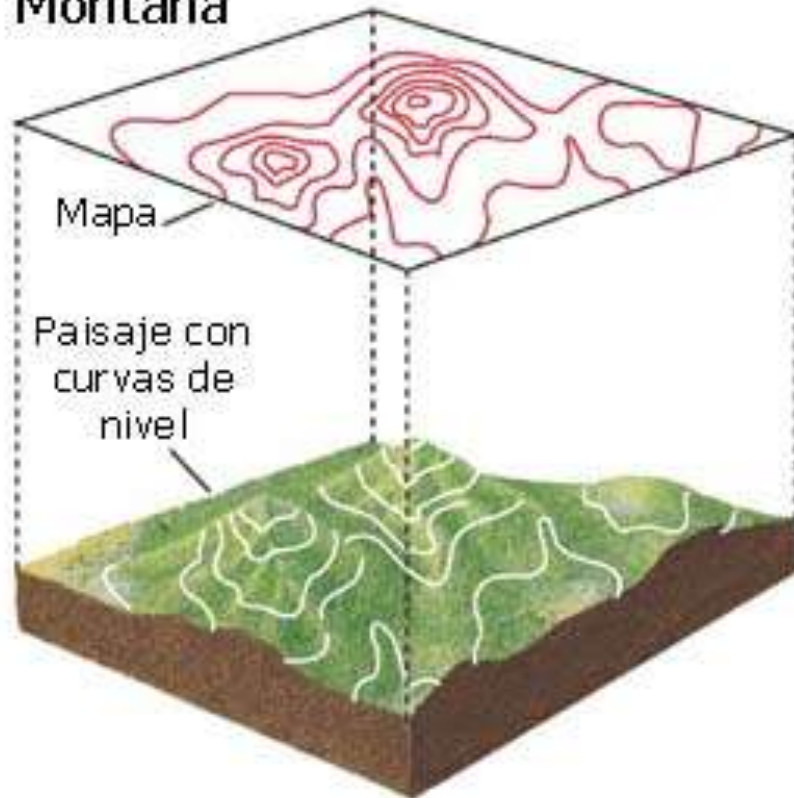
Curvas de nivel en plano



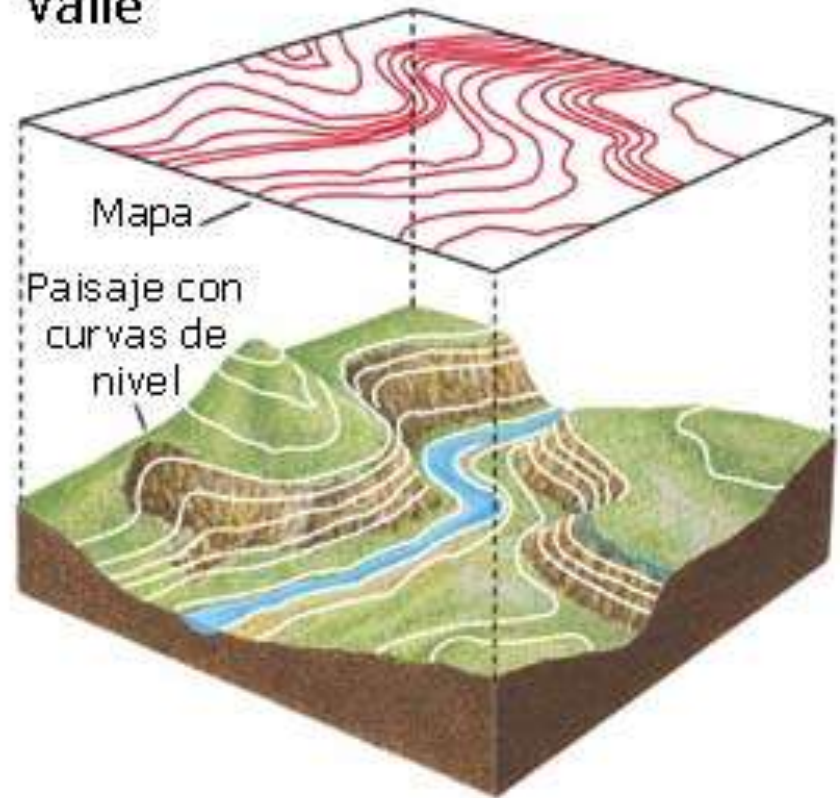
Curvas de nivel levantadas en superficie

PROYECCIÓN SOBRE UN PLANO DE LAS CURVAS DE NIVEL

Montaña



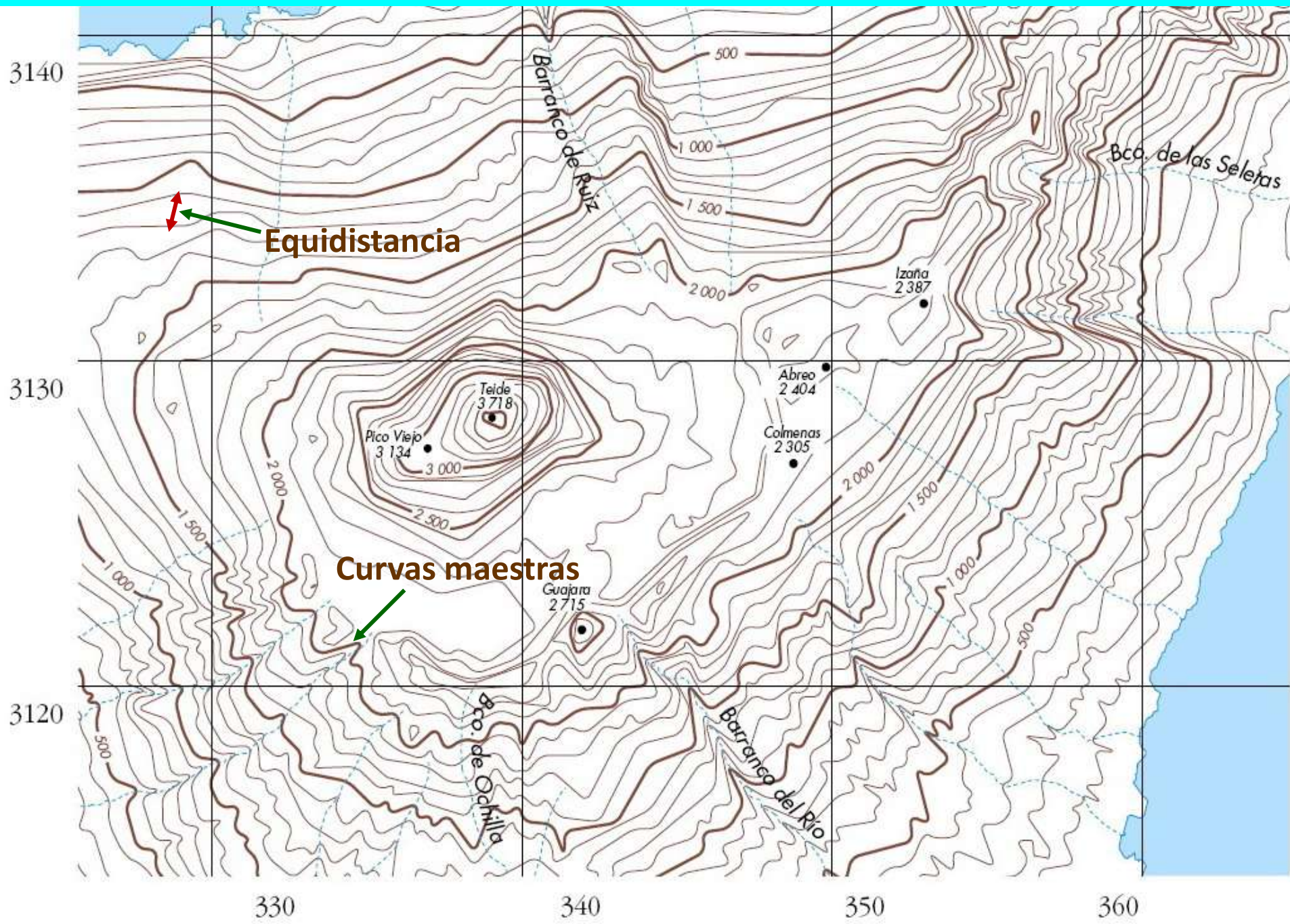
Valle



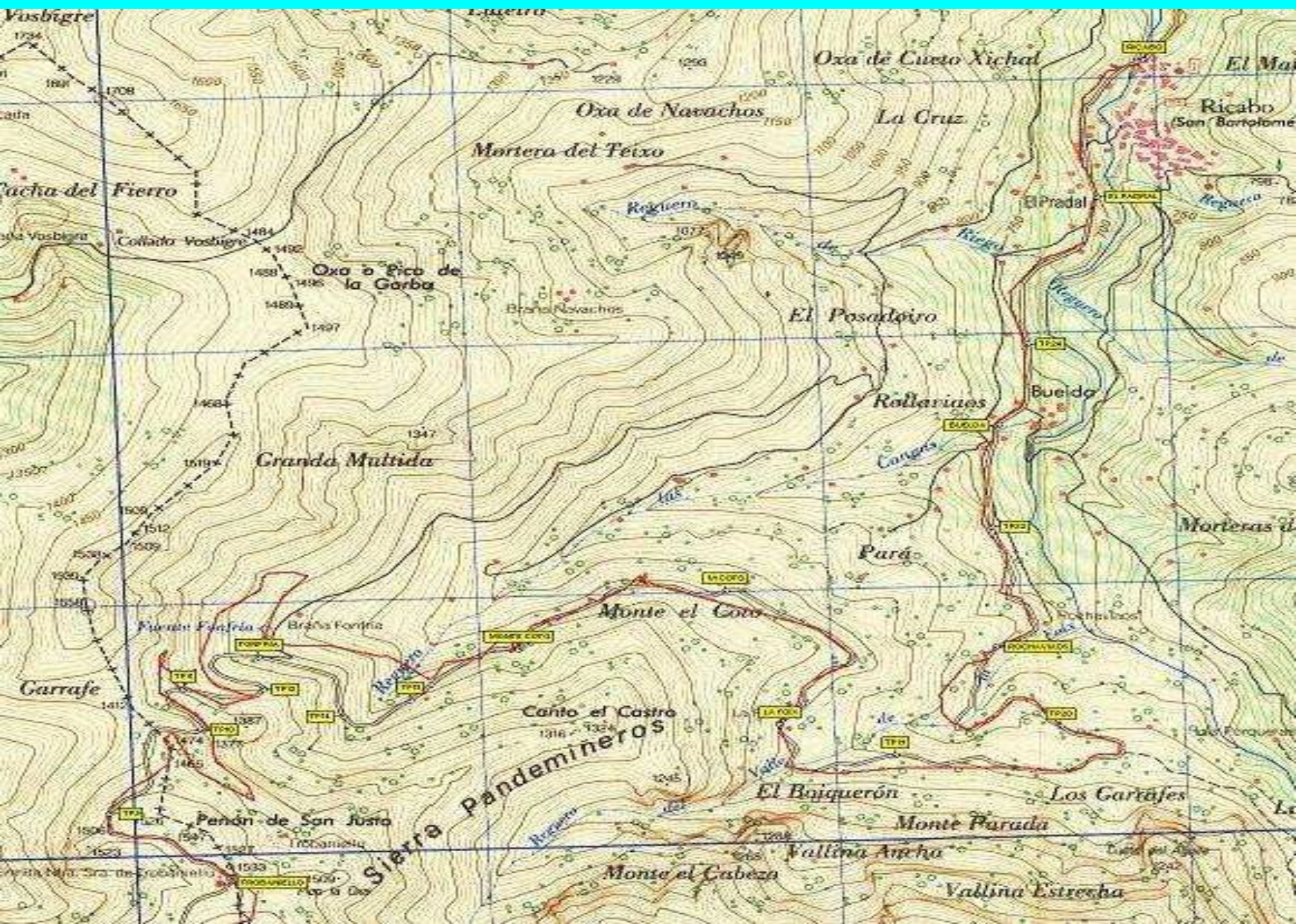
EQUIDISTANCIA



EQUIDISTANCIA Y CURVAS MAESTRAS



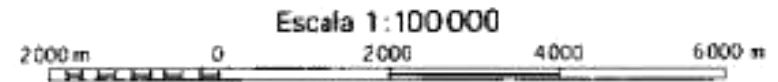
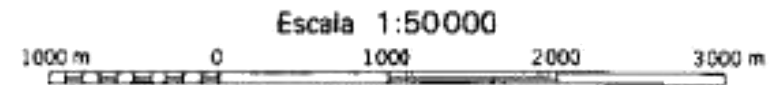
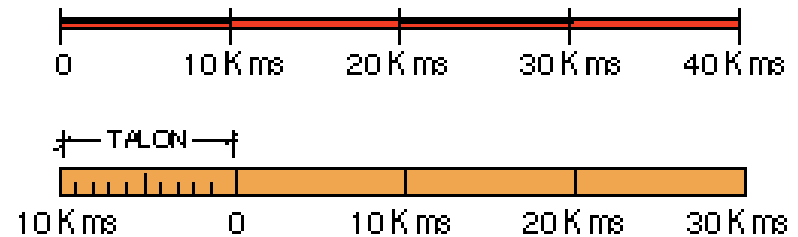
MAPA TOPOGRÁFICO REAL



ESCALA DEL MAPA

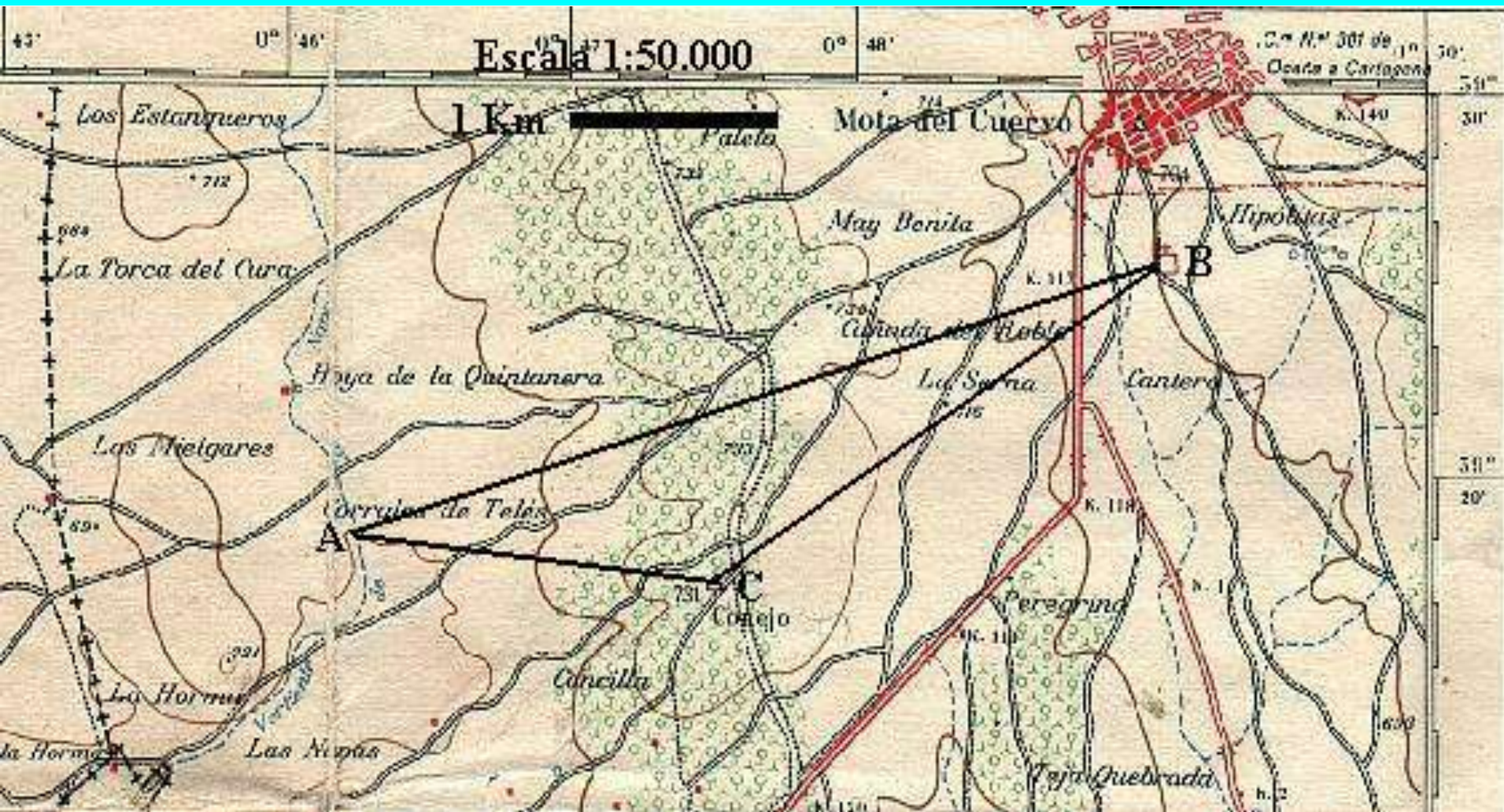
Forma de expresar la escala:

- **Gráfica:** se trata de una línea dividida en segmentos numerados.
- **Numérica:** representada en forma de proporción (1:5000) o fracción ($1/5000$), indica cuantos centímetros de la realidad están representados en un centímetro del plano o mapa (1 cm. del mapa son 5000 cm en la realidad).
- **Verbal** (palabras y cifras): como por ejemplo: "1 centímetro representa 100 kilómetros".



Ejemplo: 1 cm., corresponde a 50.000 cm (= 500 m = 0,5 km.) en la realidad.

ESCALA DEL MAPA

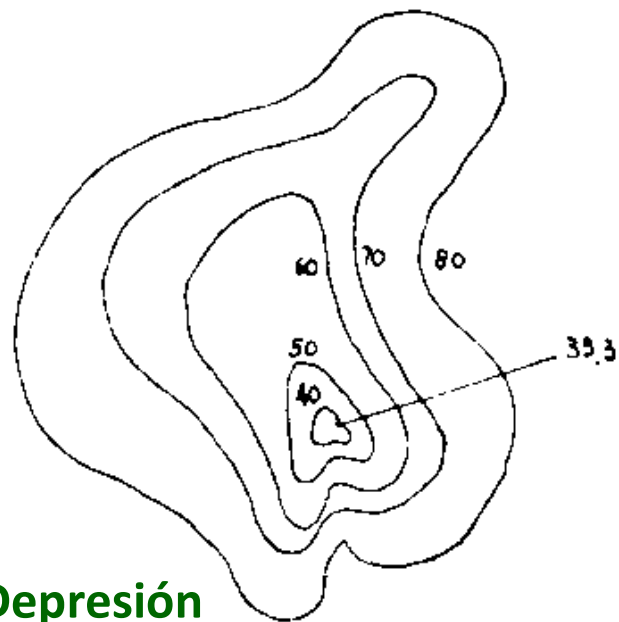


Una unidad del mapa corresponde a 50.000 unidades del terreno.

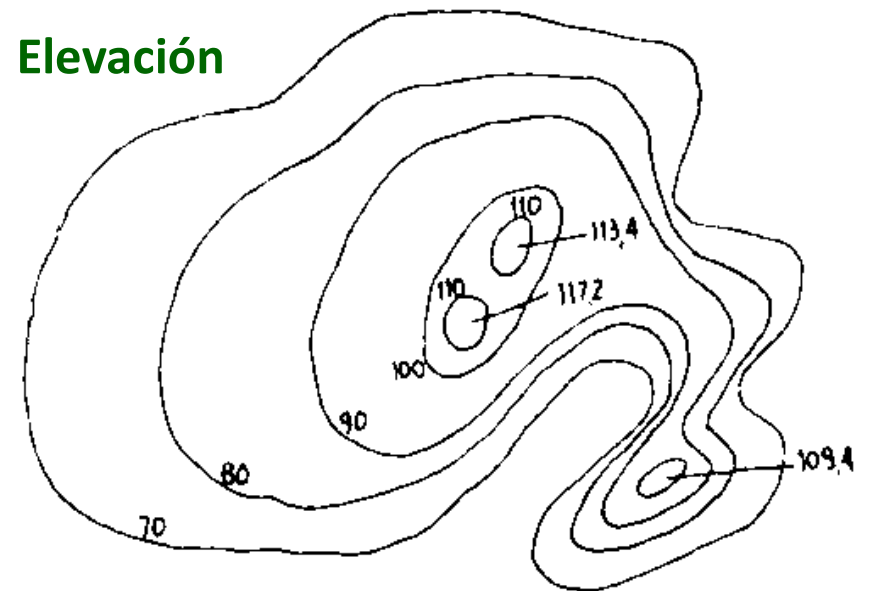
¿Cuántos km corresponde a 5 cm del mapa? $\longrightarrow$ 2500 m

ESTUDIO DE DETALLE DE LAS CURVAS DE NIVEL

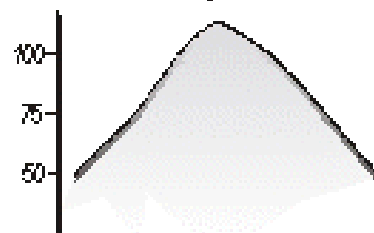
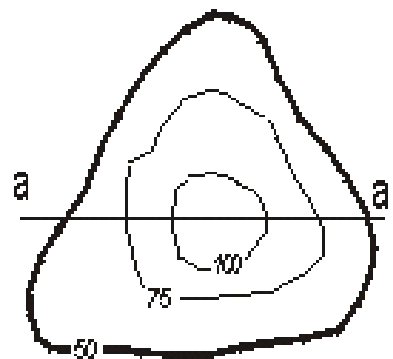
Depresión



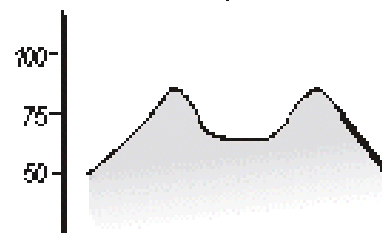
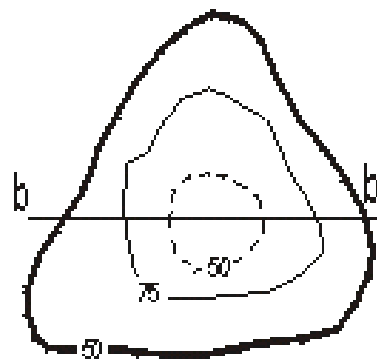
Elevación



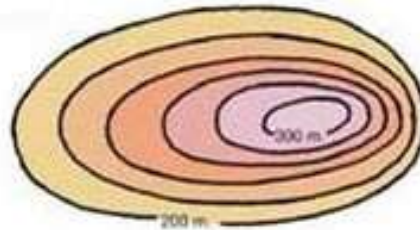
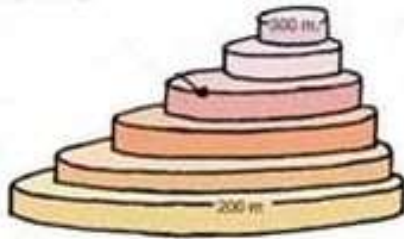
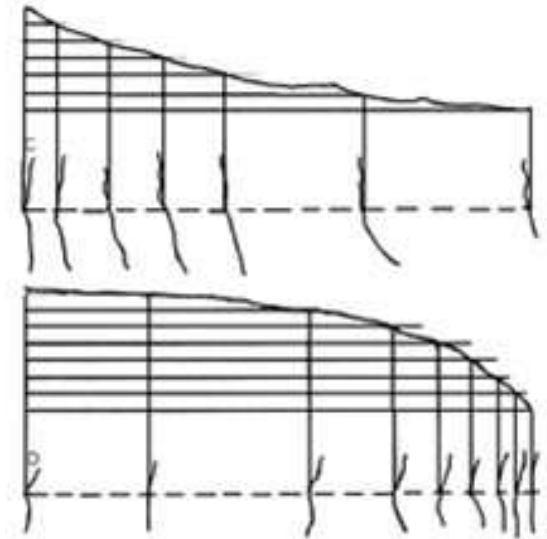
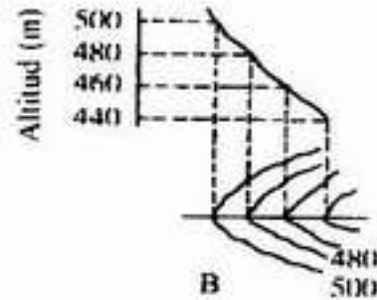
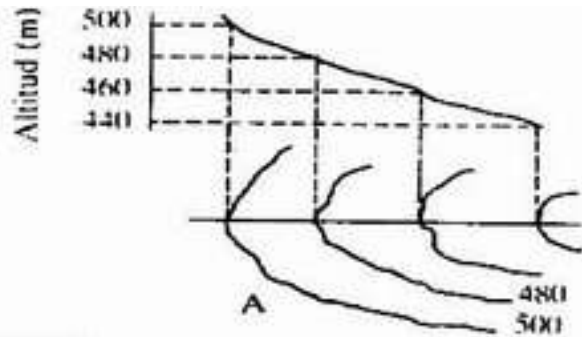
Depresión



Elevación



ESTUDIO DE DETALLE DE LAS CURVAS DE NIVEL



valle



collado



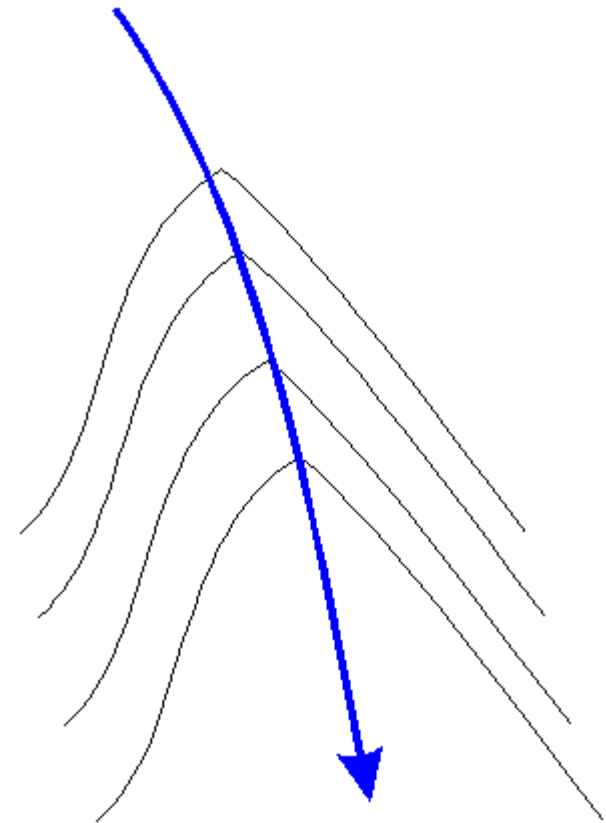
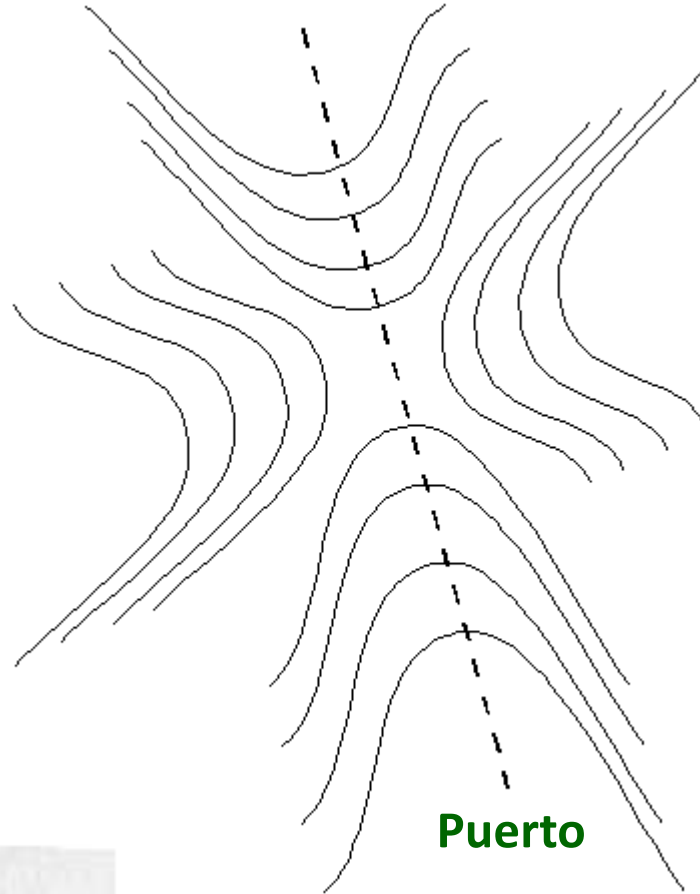
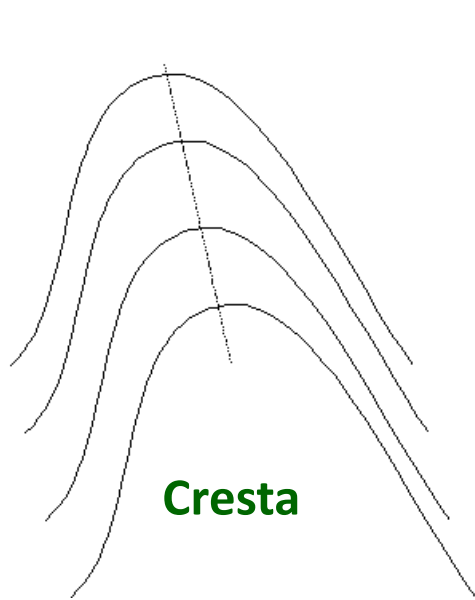
cresta



montaña

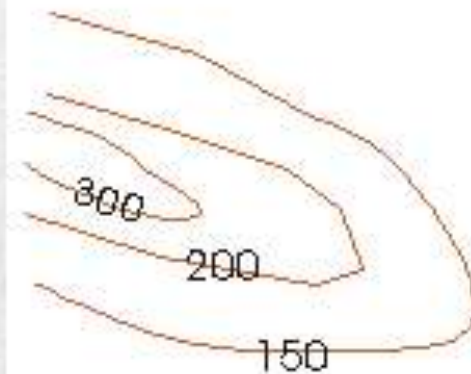
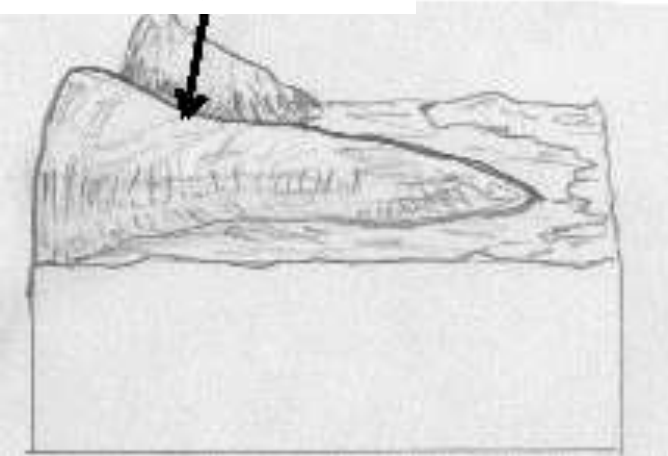


ESTUDIO DE DETALLE DE LAS CURVAS DE NIVEL

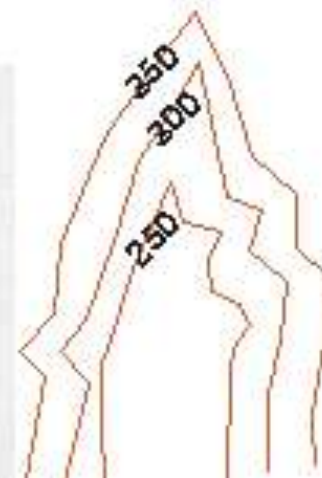
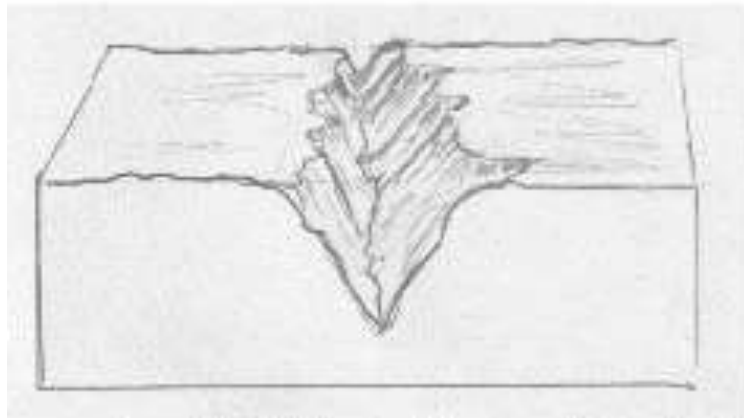
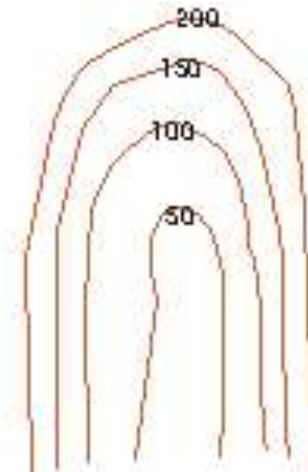
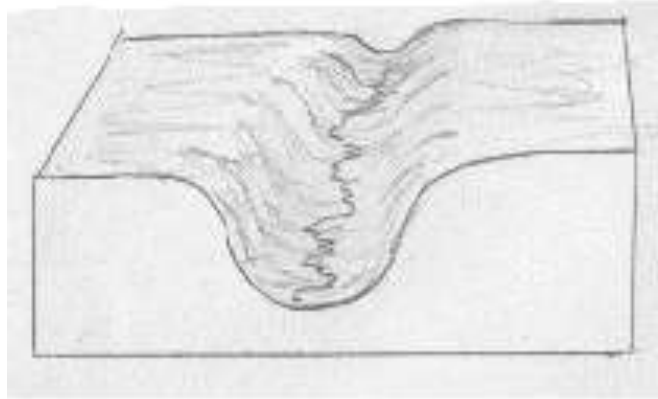


Sentido de
las aguas

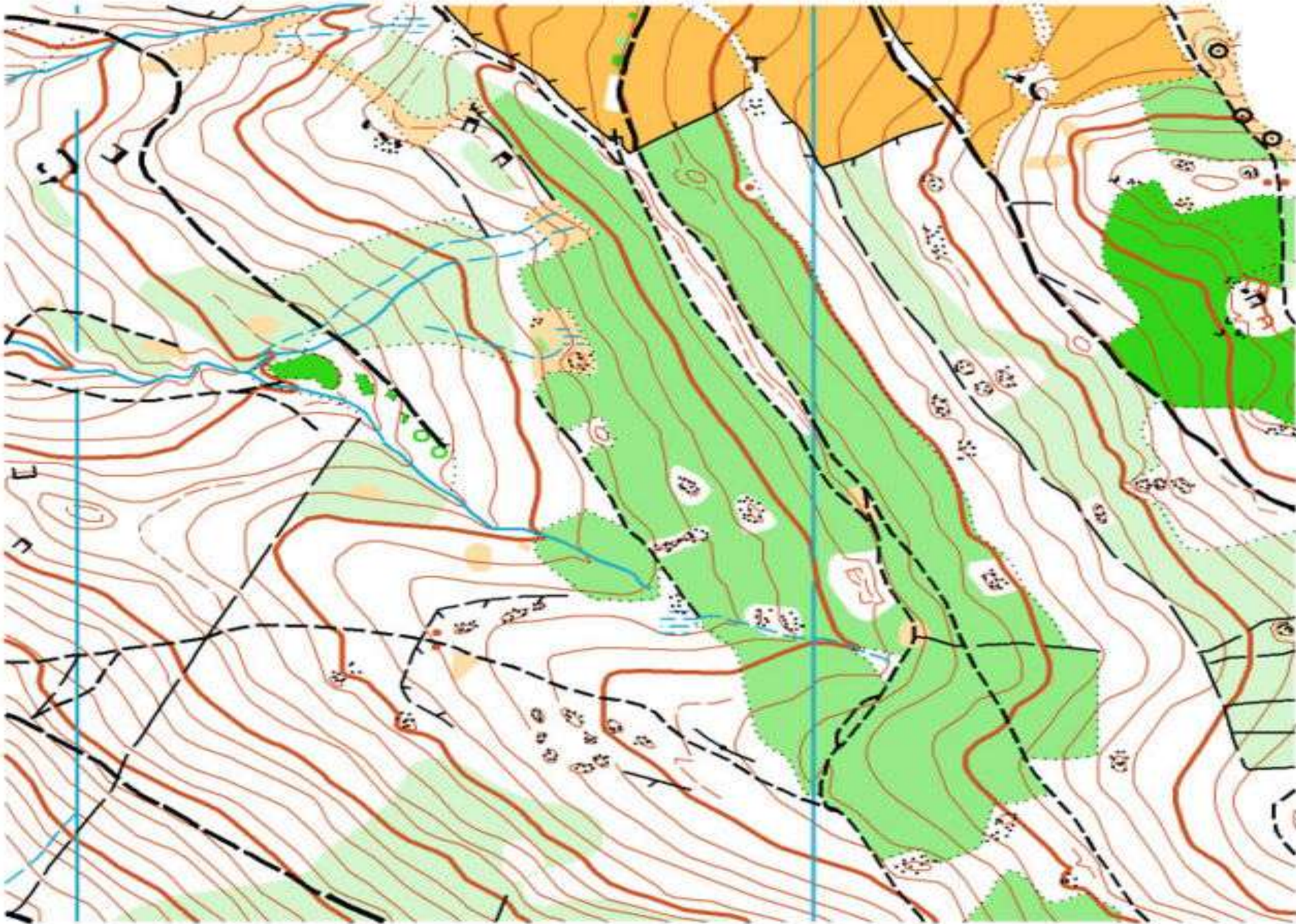
Espigón



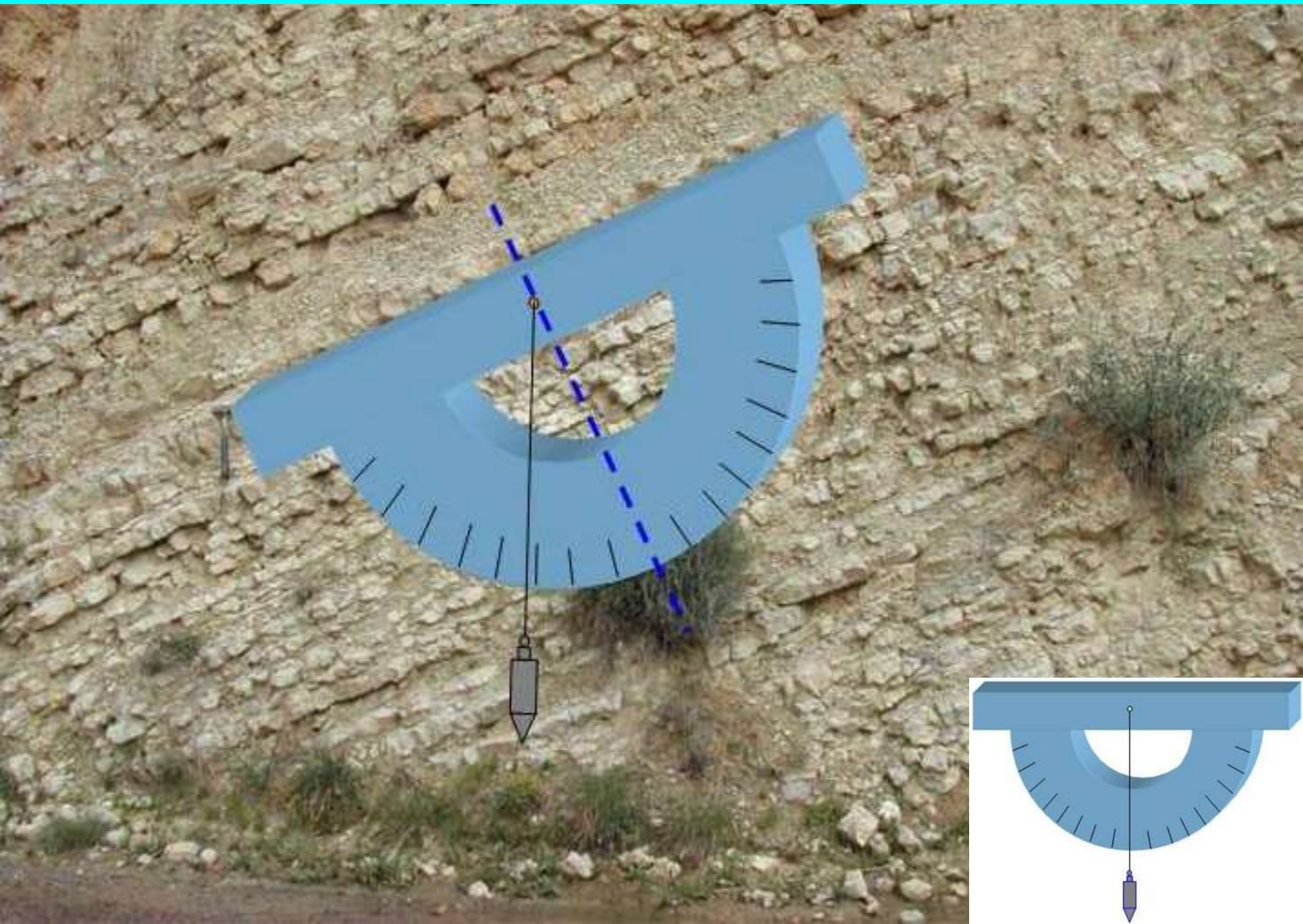
ESTUDIO DE DETALLE DE LAS CURVAS DE NIVEL



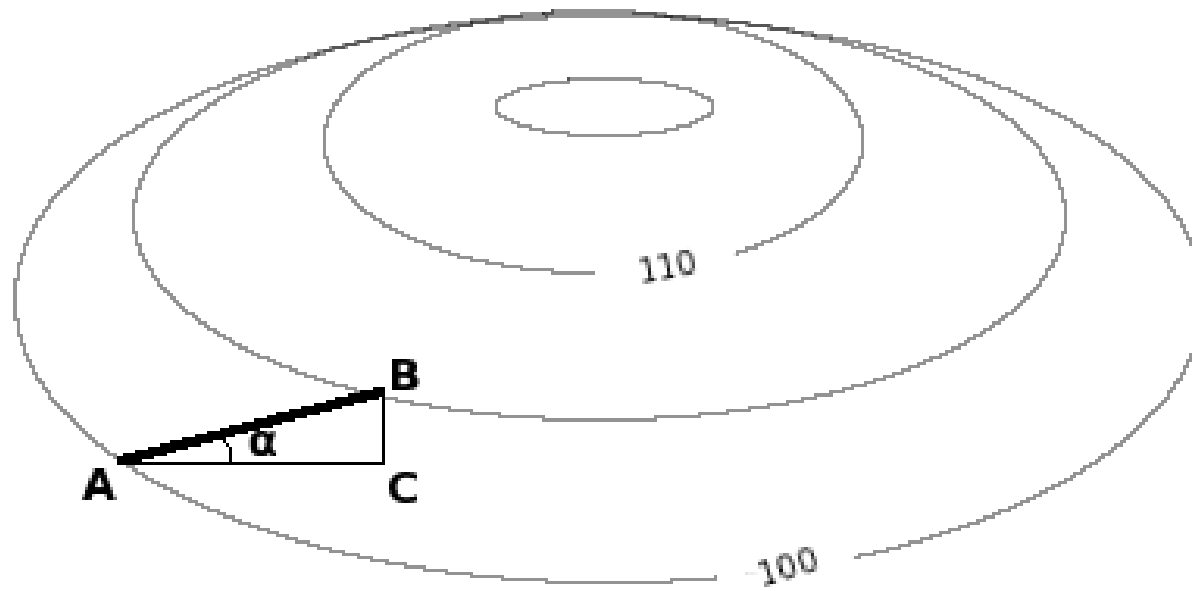
¿EL RÍO FLUYE HACIA EL ESTE O HACIA EL OESTE?



CÁLCULO DE LA PENDIENTE. CLINÓMETRO

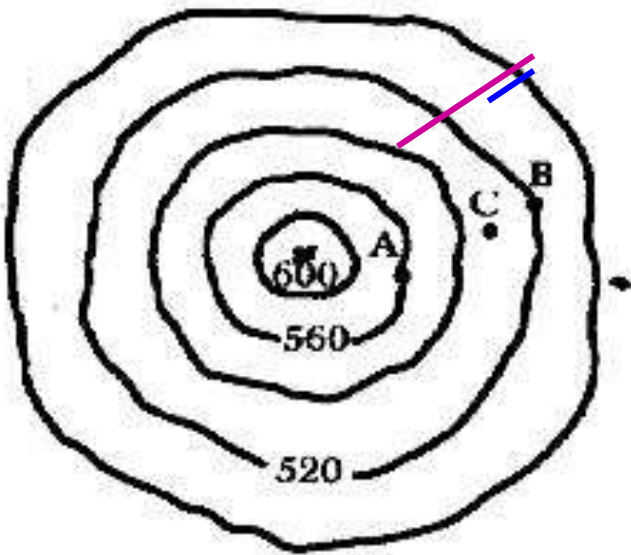


CÁLCULO DE LA PENDIENTE ENTRE DOS CURVAS DE NIVEL



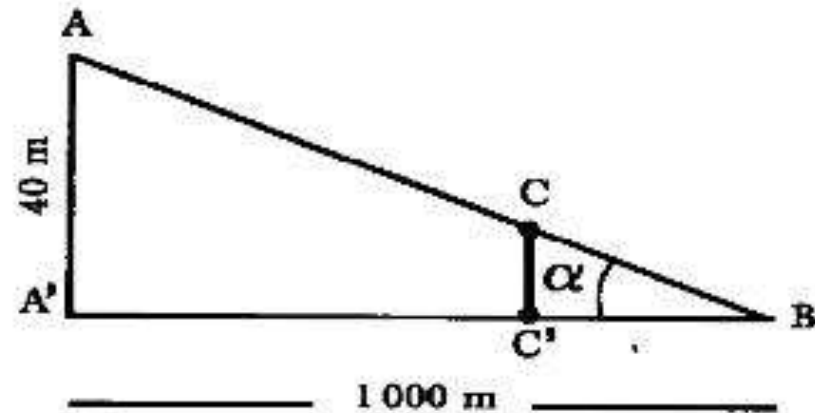
$$\% \text{ Pendiente } (A,B) = \frac{BC}{AC} \times 100$$

CÁLCULO DE LA PENDIENTE ENTRE DOS PUNTOS CUALQUIERA



Escala 1: 50 000

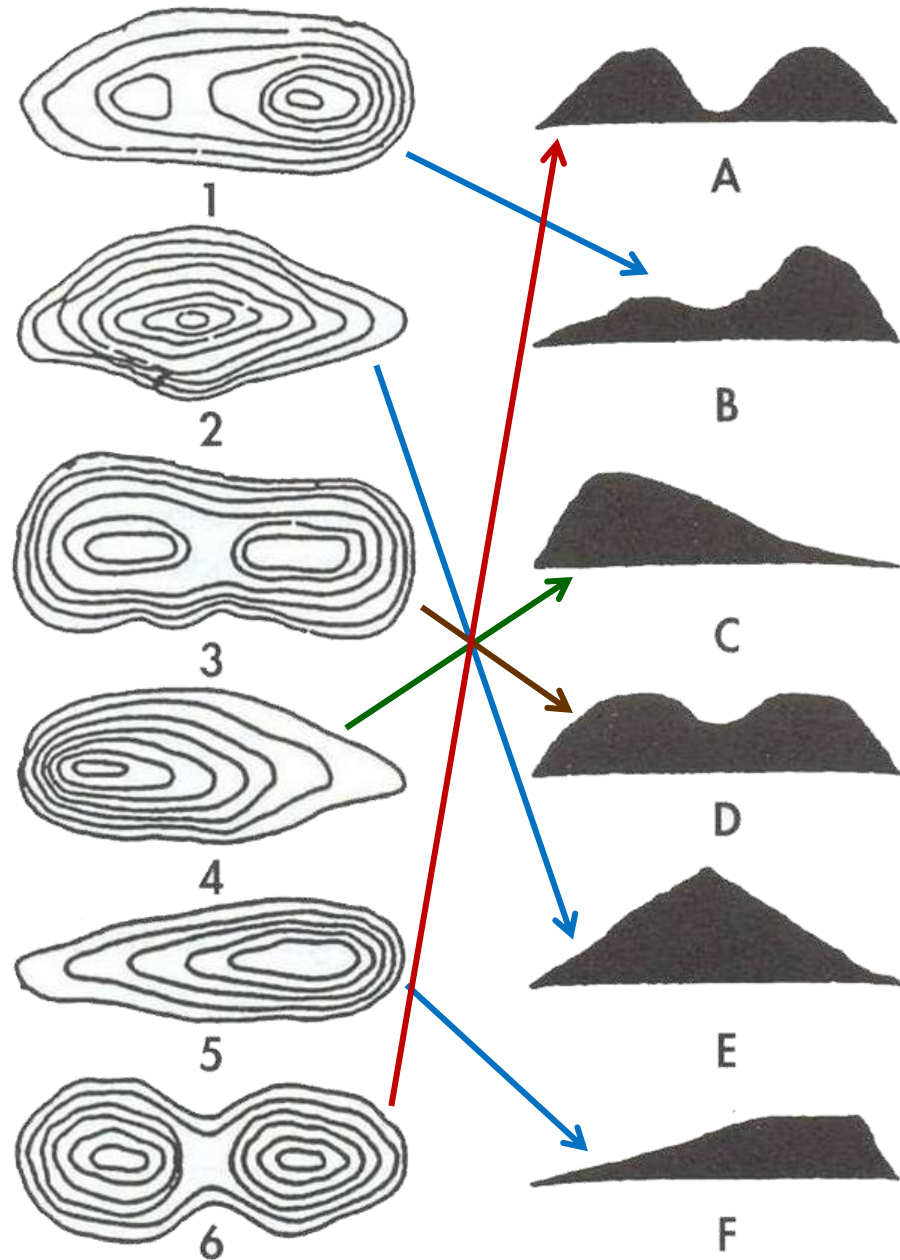
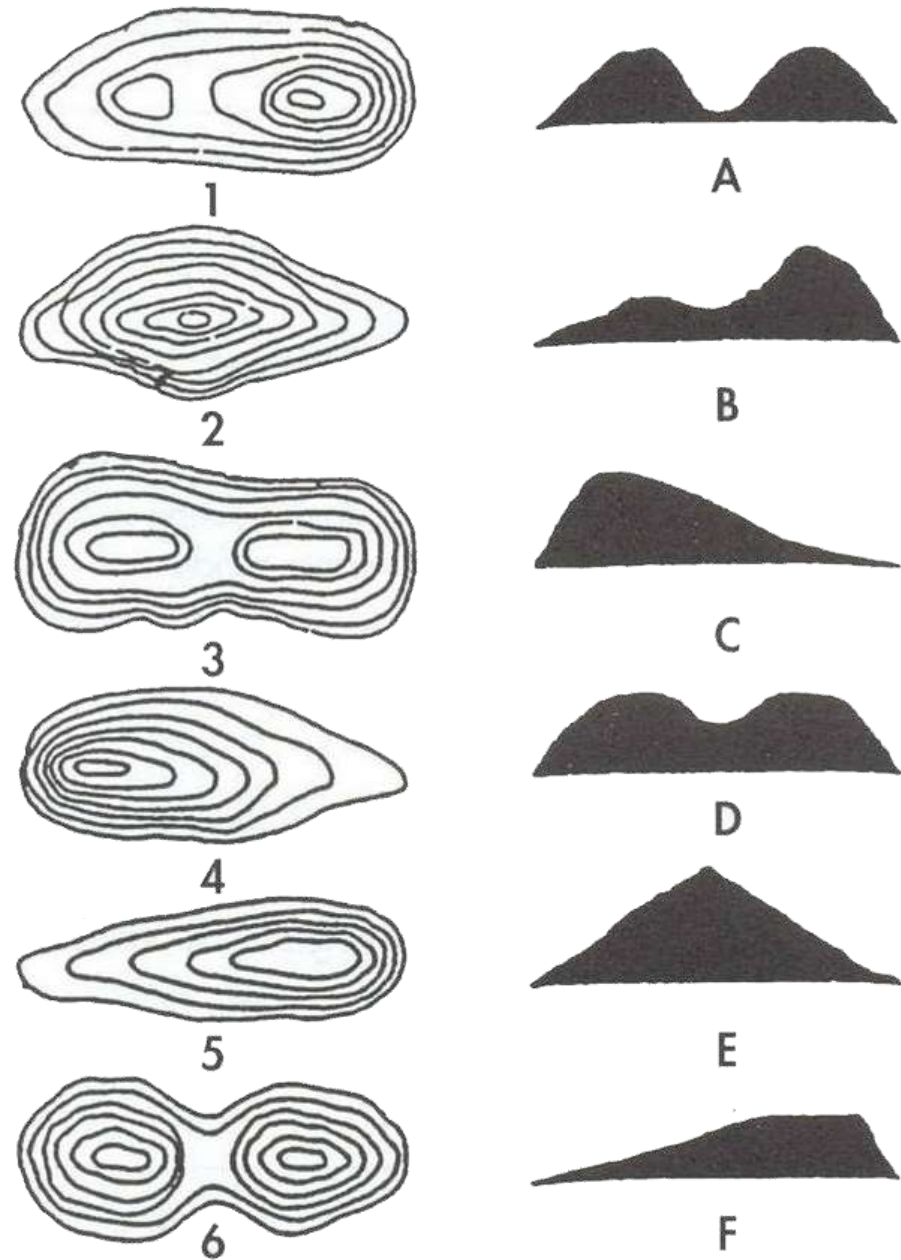
Equidistancia: 20 m



$$\% \text{ Pendiente (A,B)} = \frac{AA'}{A'B} \times 100$$

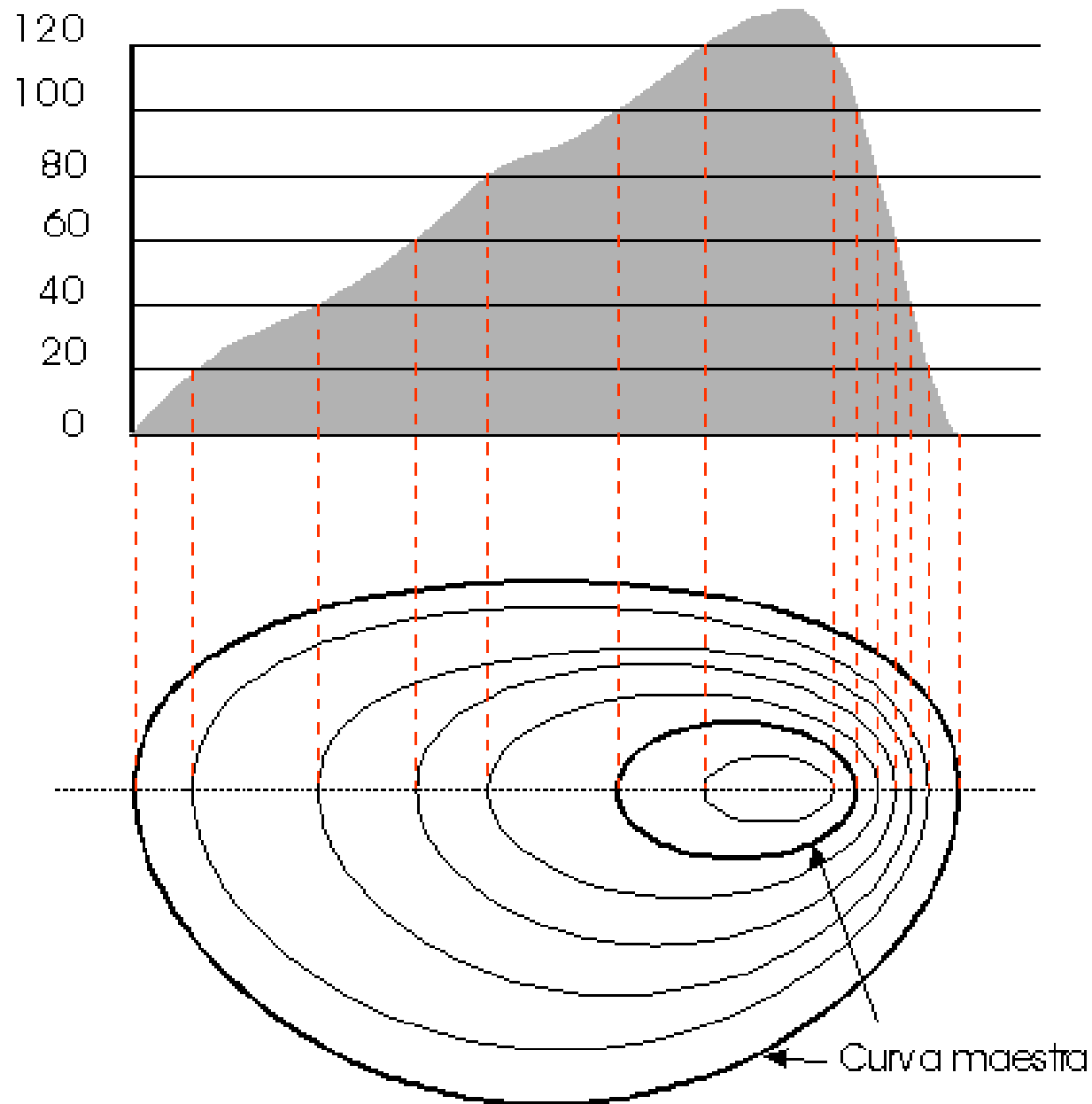
$$\text{Pendiente (C,B)} \Rightarrow \frac{CC'}{AA'} = \frac{C'B}{A'B} \Rightarrow CC' = \frac{AA' \times C'B}{A'B}$$

EJERC.: RELACIONA CADA PERFIL CON SU MAPA TOPOGRÁFICO

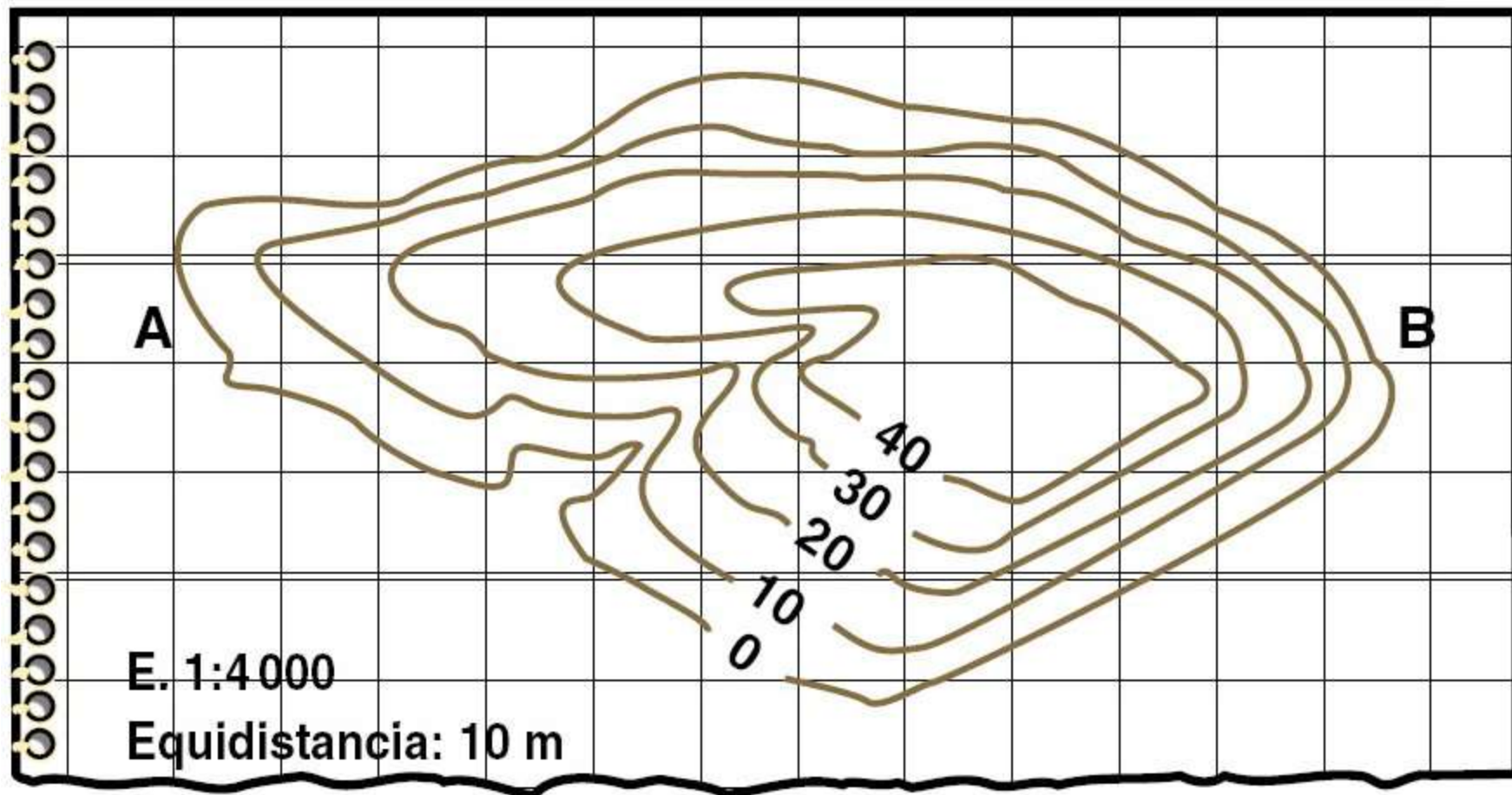


Perfiles topográficos

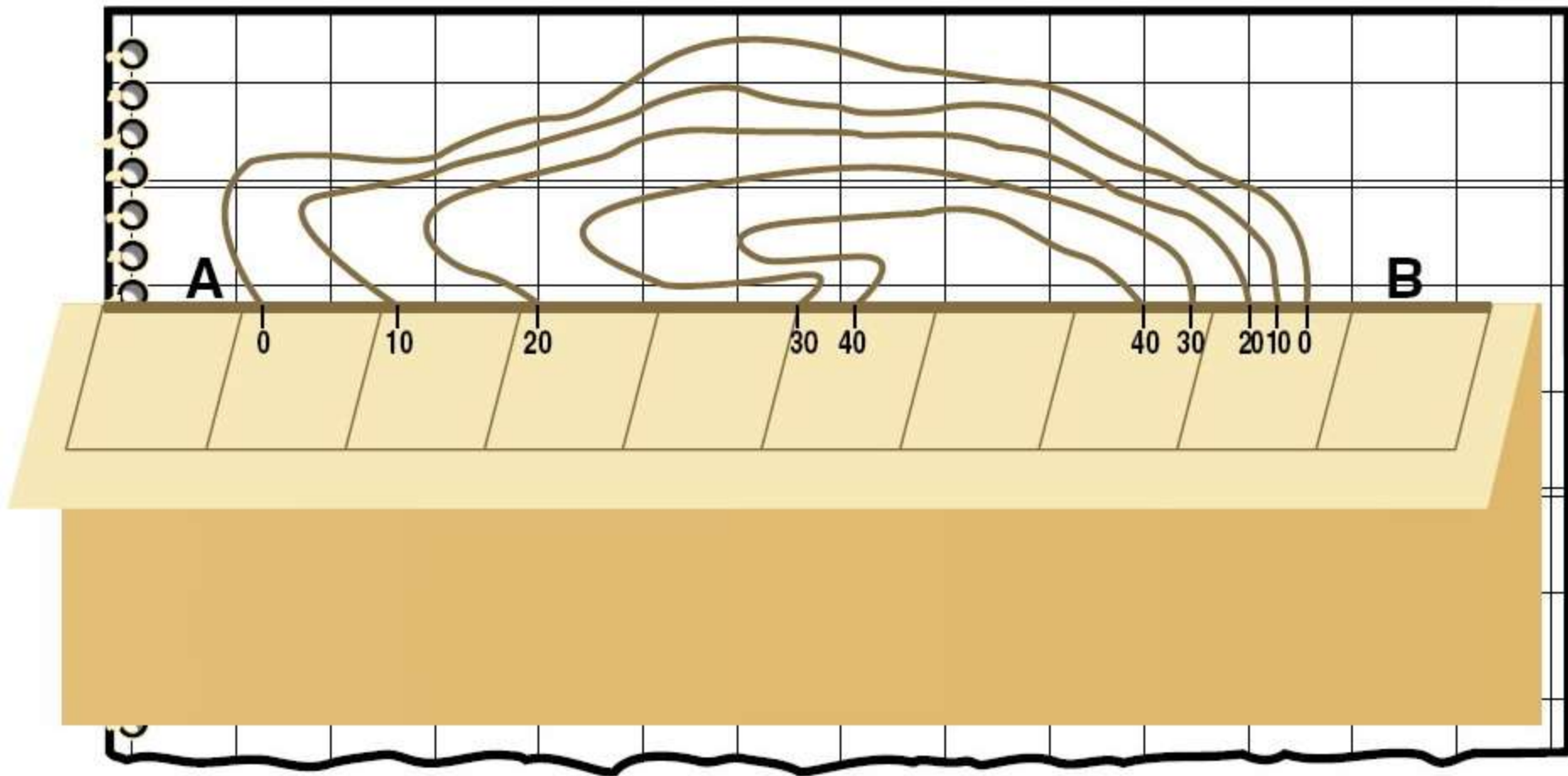
¿CÓMO DIBUJAR EL PERFIL DEL RELIEVE A PARTIR DEL MAPA?



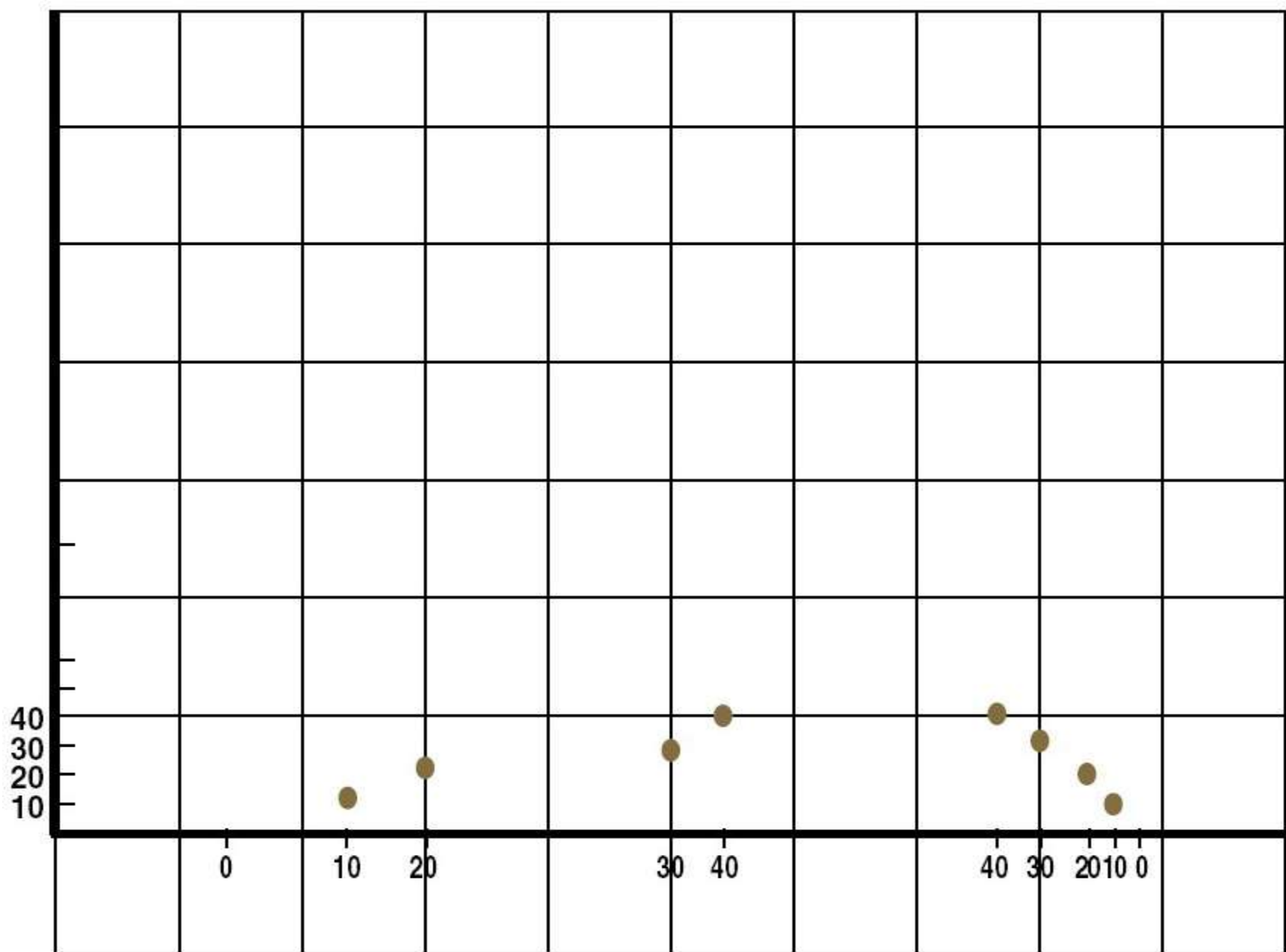
PERFILES TOPOGRÁFICOS



PERFILES TOPOGRÁFICOS

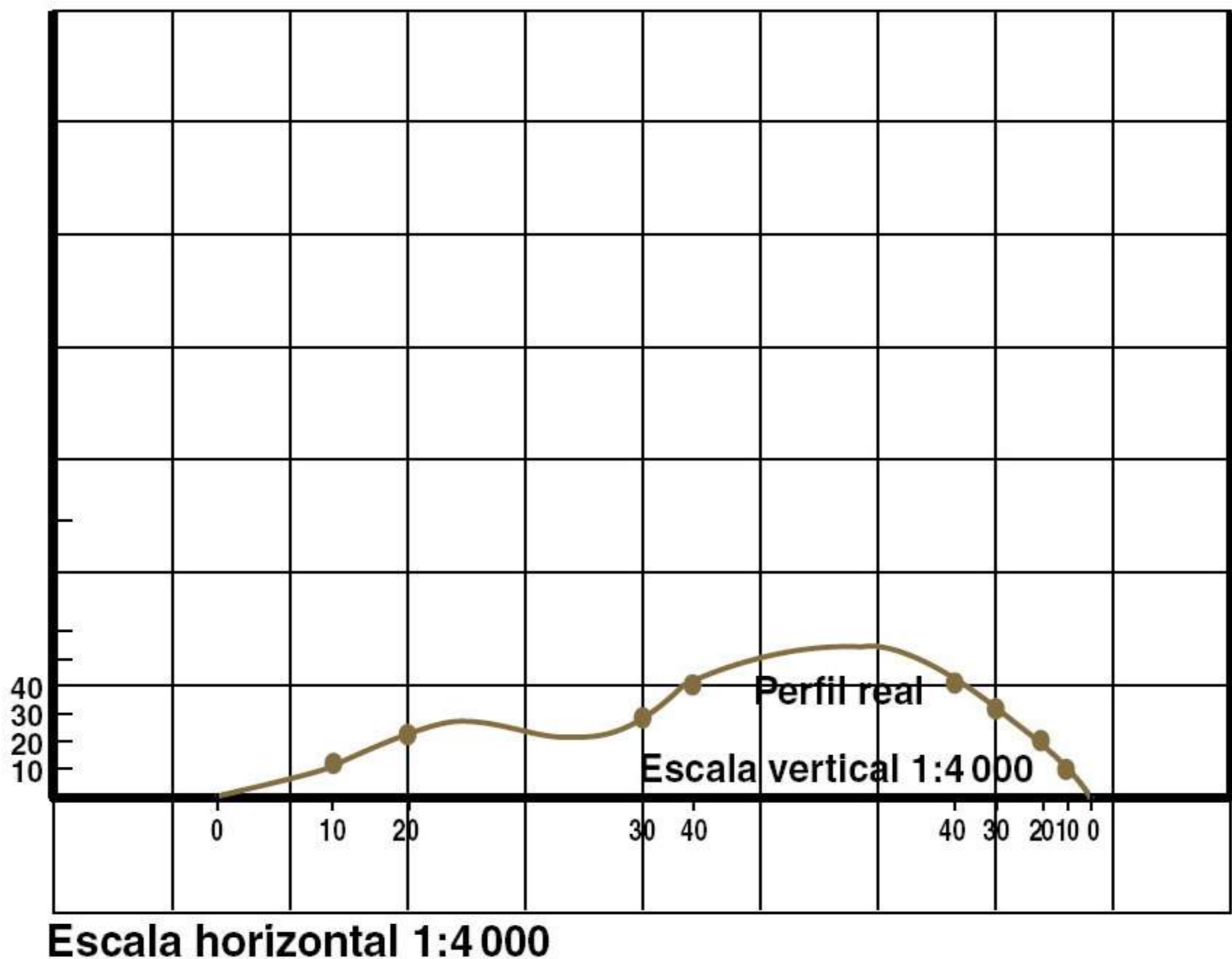


PERFILES TOPOGRÁFICOS

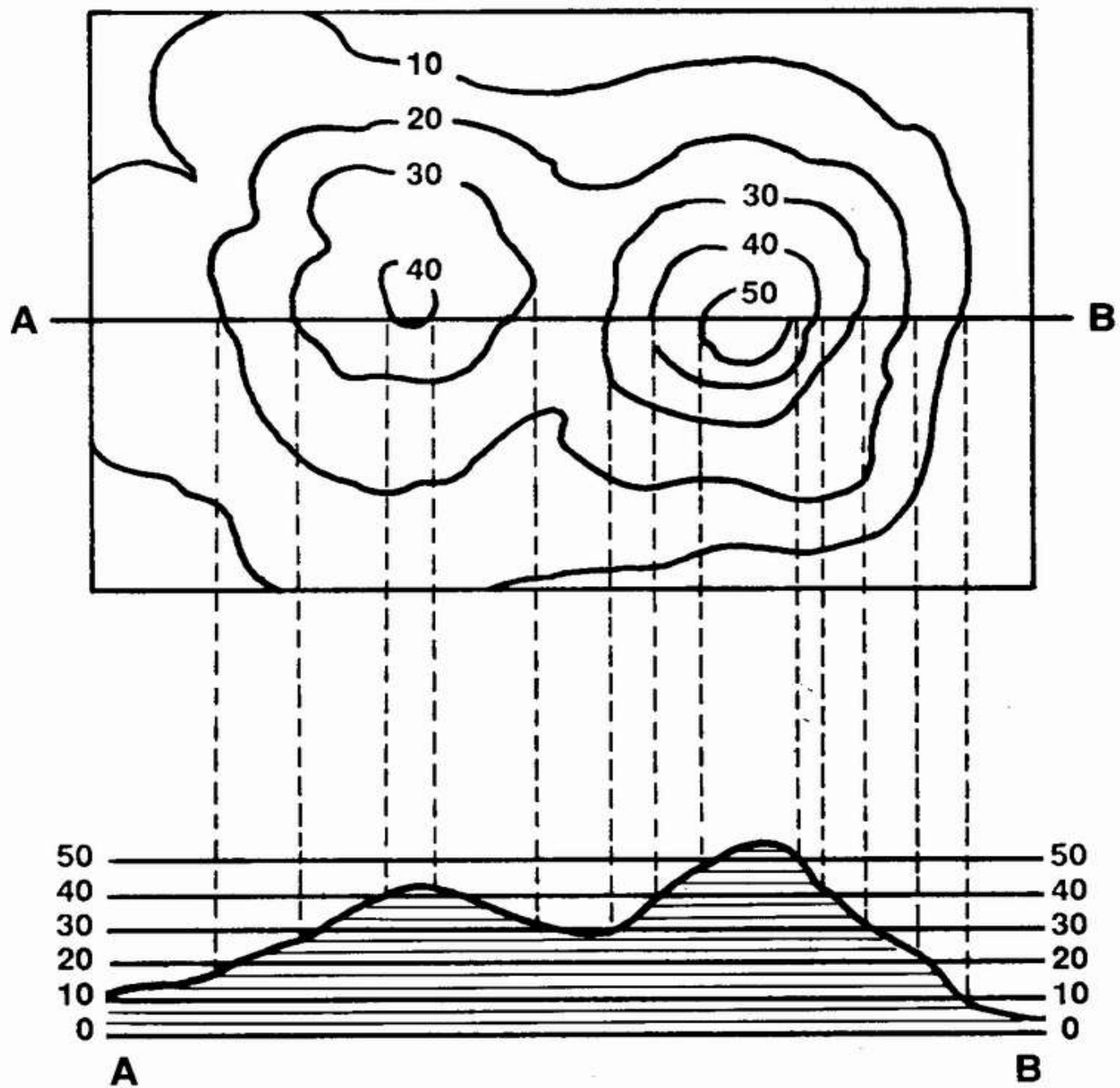


Escala horizontal 1:4 000

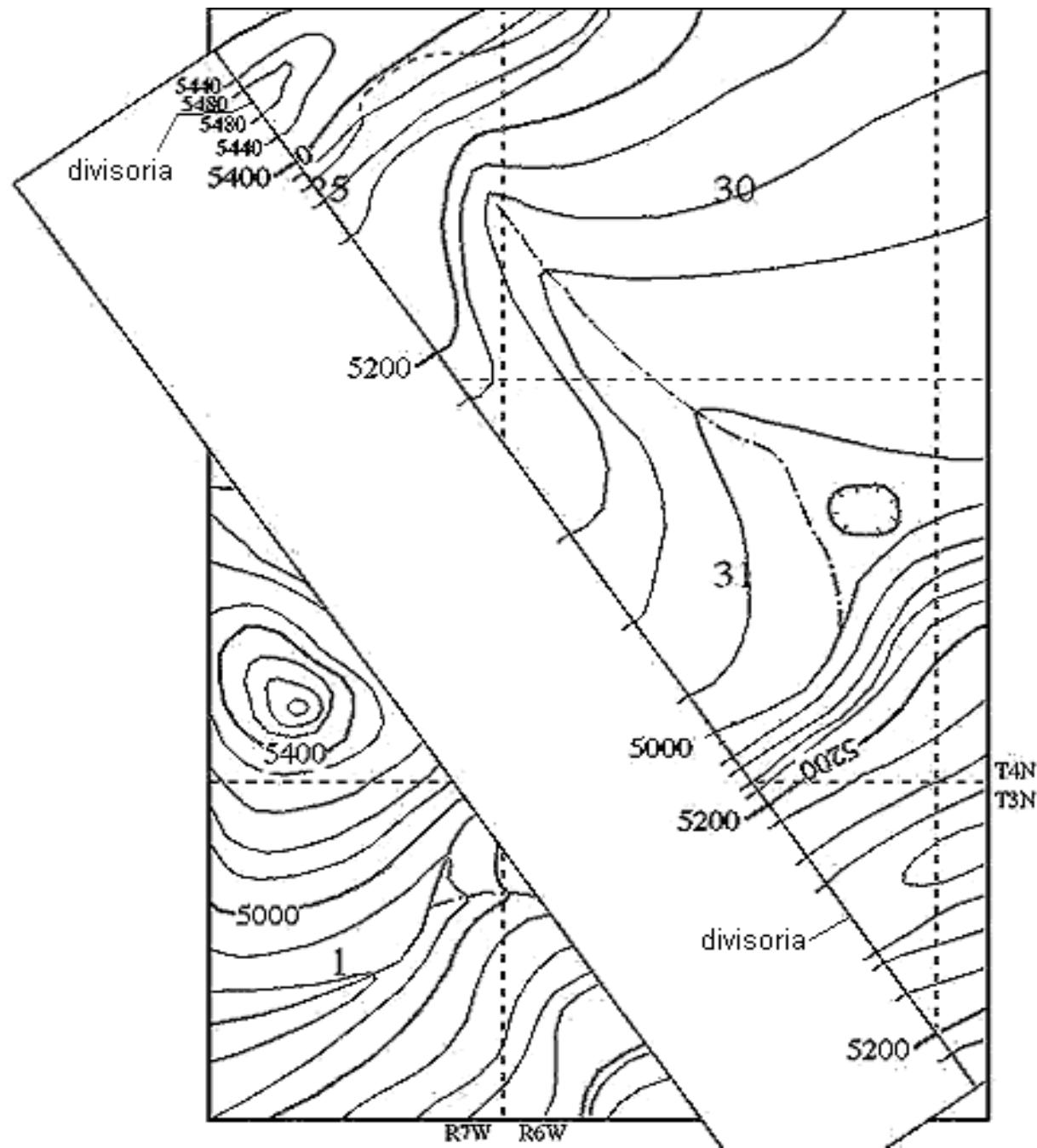
PERFILES TOPOGRÁFICOS



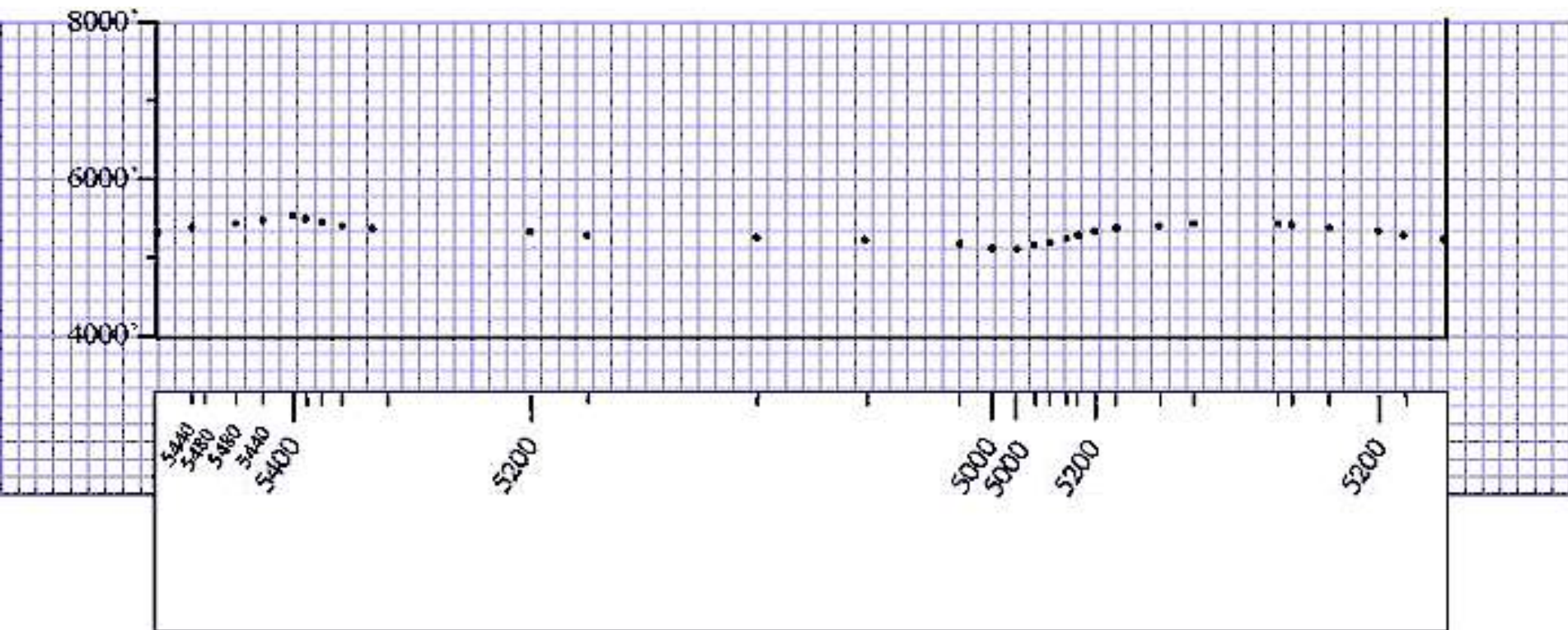
EJEMPLO DE PERFIL TOPOGRÁFICO



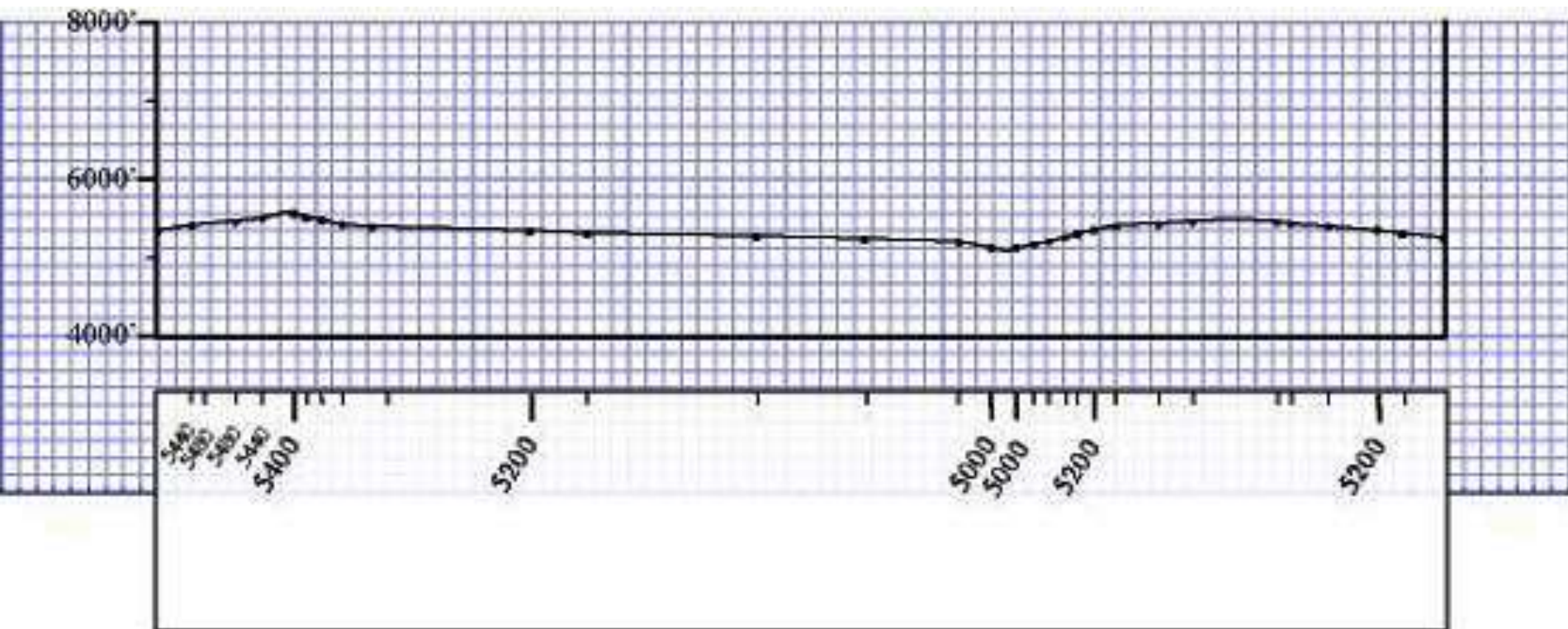
A VECES HAY QUE EXAGERAR LA ESCALA VERTICAL



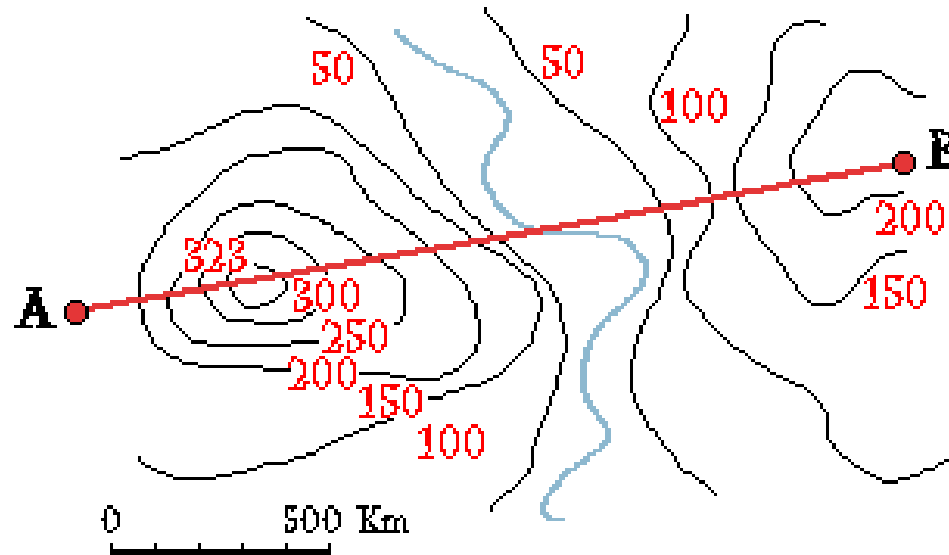
A VECES HAY QUE EXAGERAR LA ESCALA VERTICAL



A VECES HAY QUE EXAGERAR LA ESCALA VERTICAL

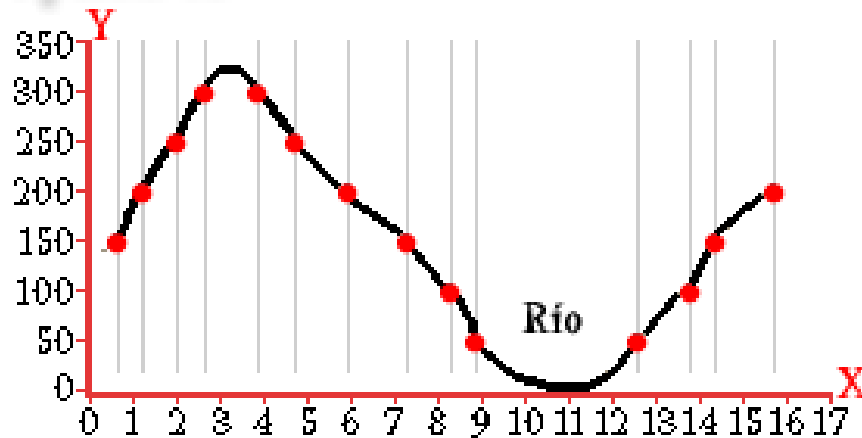


HAY QUE TENER CUIDADO CON LA ORIENTACIÓN DEL MAPA



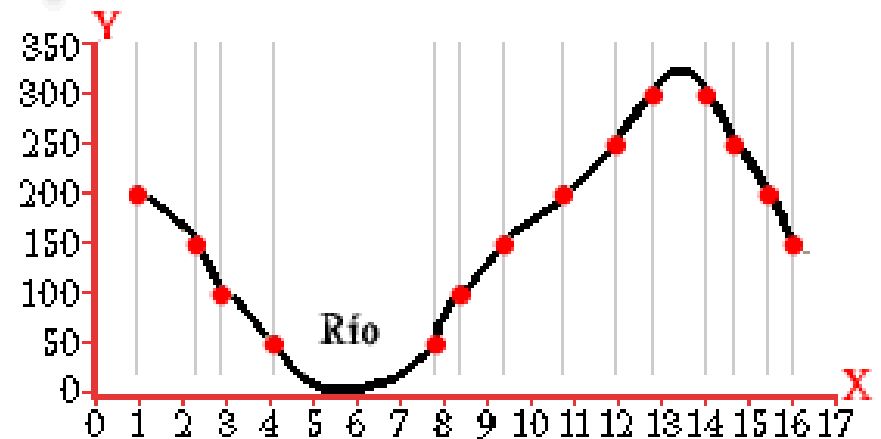
Opción A

Bien

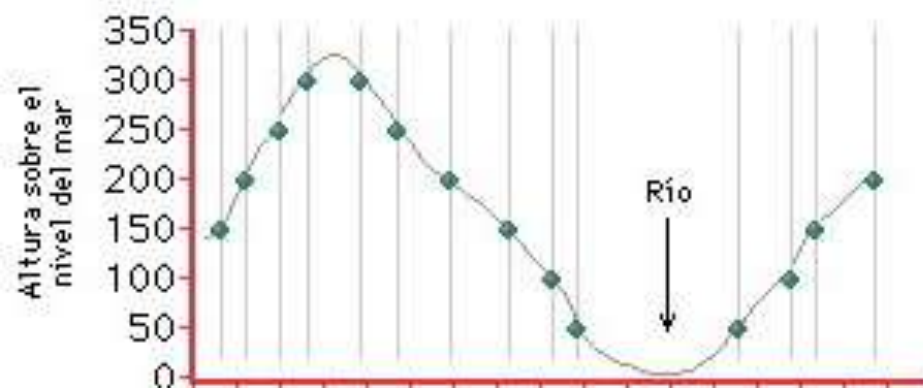
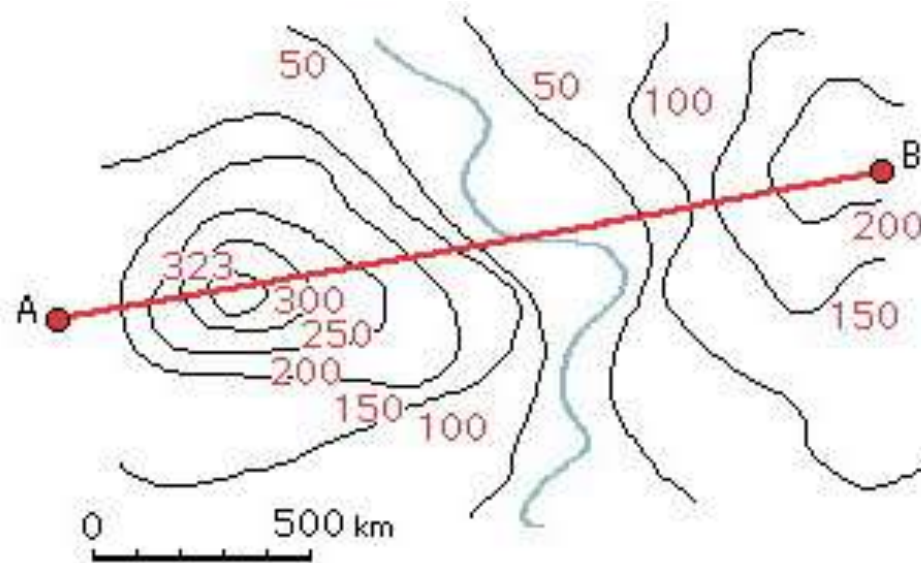


Opción B

Mal



EJEMPLO DE PERFIL TOPOGRÁFICO



ELEMENTOS AUXILARES DE LOS MAPAS



Altímetro



Curvímetro



Brújula escolar

ELEMENTOS AUXILARES DE LOS MAPAS

Brújula de Geólogo

Clinómetro



FIN

