

Practice Questions

A distance of 12.0 cm is measured between two road intersections on a photograph for which the focal length is 305 mm. The distance between the same two features on a 1: 50,000 map is 4.8 cm. Determine the flying height (nearest foot).

① use map to get RW distance  $\frac{4.8 \text{ cm}}{x \text{ cm}} = \frac{1}{50,000} \quad x = \underline{\underline{240,000 \text{ cm}}}$

② scale of photo  $\frac{12.0 \text{ cm}}{240,000 \text{ cm}} = \frac{1}{x} \quad x = 20,000$   
1: 20,000

③ get H in ft.  $f = 305 \text{ mm} \leftarrow \text{really this} = \underline{\underline{1 \text{ ft}}}$   
 $\frac{f}{H} = \frac{1}{20,000} \Rightarrow \frac{1'}{H} = \frac{1}{20,000} \quad H = \underline{\underline{20,000 \text{ ft}}}$

Two features can be seen on both a map and air photo (30BCC1627 No. 22). A distance of 13.6 cm is measured on photo and the corresponding distance of 9.3 cm is measured on a 1: 20,000 map. The flying altitude was 14,400 ft. Determine the elevation (nearest metre) of the ground.

① use map to get RW distance  $\frac{9.3 \text{ cm}}{x \text{ cm}} = \frac{1}{20,000} \quad x = \underline{\underline{186,000 \text{ cm}}}$

② scale of photo  
 $\frac{13.6 \text{ cm}}{186,000 \text{ cm}} = \frac{1}{xxx} \quad xxx = 13,676 \quad \underline{\underline{1: 13,676}}$

③ get H 30BCC  $\leftarrow$  really means 1 ft  
 $\frac{f}{H} = \text{scale} \quad \frac{1'}{H'} = \frac{1}{13,676}$   
H = 13,676 ft

④  $A - H = E$   
 $14,400 \text{ ft}$   
 $- 13,676$   


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 $724 \text{ ft}$   
 $\swarrow \div 3.28$   
221 m

Refer to photo 30BCB91025 No. 84. The altitude is provided on the gauge along the margin (it reads between 27,300 ft). What is the scale of the photo along the sea shore?

means  $\approx 30$  cm, but really 1 ft.

$$\frac{f}{H} = \frac{1}{X}$$

$$\frac{1'}{27,300'} = \text{scale} = \underline{\underline{1:27,300}}$$

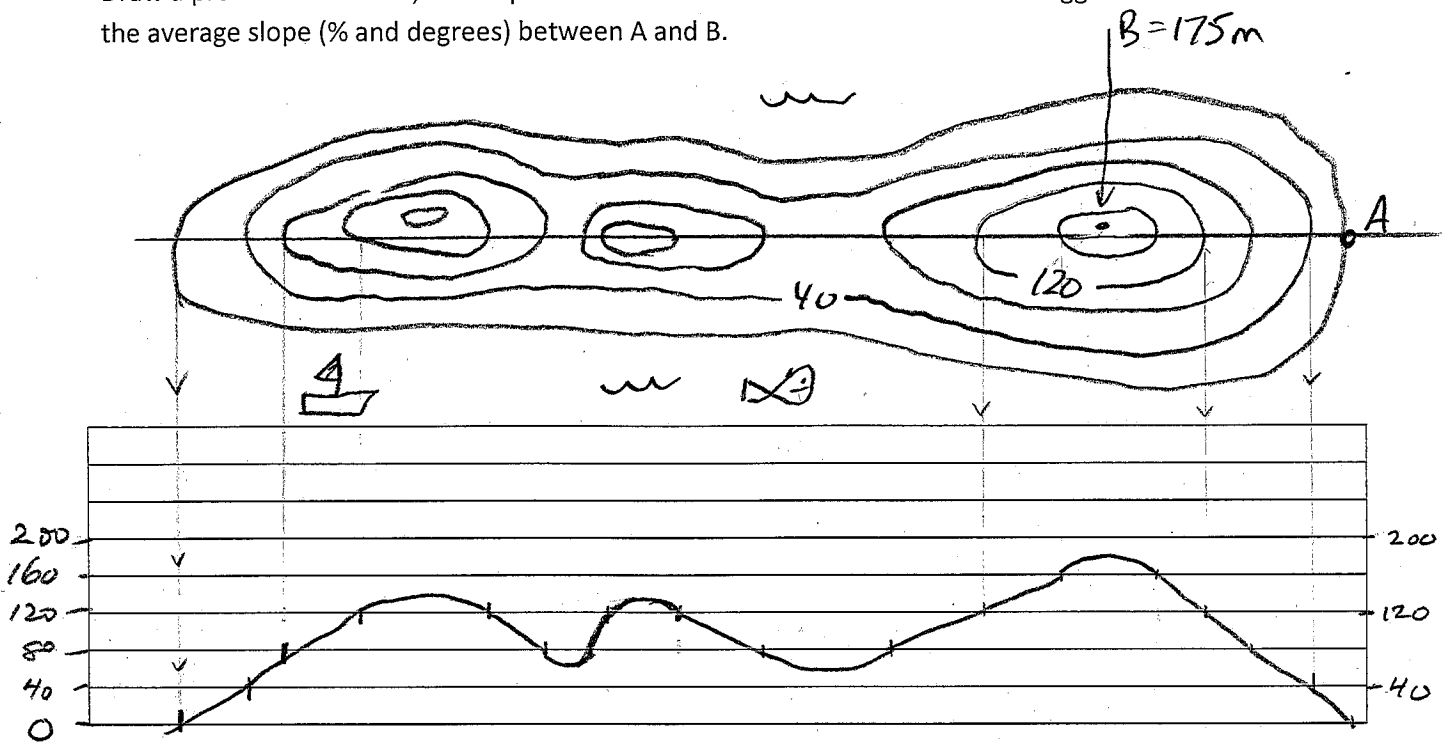
Given a target grade of 12% for a proposed trail, what is the map distance between contour lines if the map scale is 1:20,000 and the contour interval is 40m?

$$\textcircled{1} \quad \frac{12\text{m}}{100\text{m}} = \frac{40\text{m}}{X\text{m}} \quad X = \underline{\underline{333.33\text{m}}} \text{ (real world)}$$

$$\frac{\text{map cm}}{33,333\text{cm}} = \frac{1}{20,000}$$

$$\text{map dist} = \underline{\underline{1.7\text{cm}}}$$

Draw a profile of the 1: 20,000 map below. Determine the vertical scale and exaggeration. Determine the average slope (% and degrees) between A and B.



Be able to look at a contour map and determine where ridges (height of land) and creeks should flow (gullies)

Note, for profile, all I had to do was "transfer" the contours down to the graph below.

A → B slope calculation

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

A = 0m (sea level), B = 175m

A → B = 3.2 cm on map

$$\frac{3.2 \text{ cm}}{X \text{ cm}} = \frac{1}{20,000} \quad X = 640 \text{ m}$$

$$\frac{175 \text{ m}}{640 \text{ m}} = 0.273$$

27%

ARCTAN → 15°