(A) Detailed In Class Example Showing HOW to Organize a Solution

EXAMPLE 5 Rock Pillars

Rock pillars are interesting geological features found in several national parks in Ontario. Rock pillars, found in rivers and lakes, have been sculpted by wind and water. A geologist wanted to determine the height of a rock pillar in a river. The geologist set up a theodolite at C and measured ∠ACB to be 28.5°. A baseline CD was marked off, perpendicular to BC. The length of CD is 10 m, and ∠CDB = 56.4°. If the height of the theodolite is 1.6 m, what is the height of the rock pillar, to the nearest tenth of a metre?

SOLUTION

(B) Solution:

Diagram: to visualize the problem and organize the given info

Step 1: What needs to be done??

Step 2: What needs to be done???

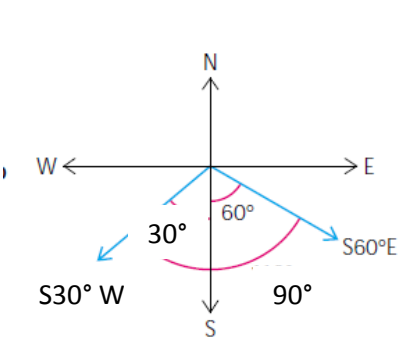
Final Answer(s):

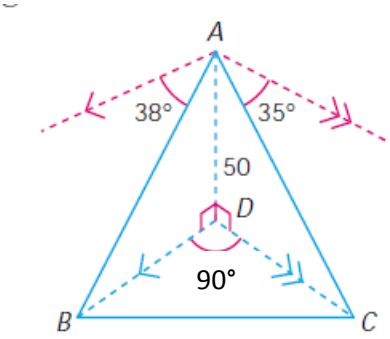
(C) Detailed In Class Example Showing HOW to Organize a Solution

From the top of a 50-m high bridge, two boats are seen at anchor. One boat is S30°W and has an angle of depression of 38°. The other boat is S60°E and has a 35°angle of depression. How far apart are the boats?

(D) Solution:

Diagram: to visualize the problem and organize the given info





Step 1: What needs to be done??

Step 2: What needs to be done???

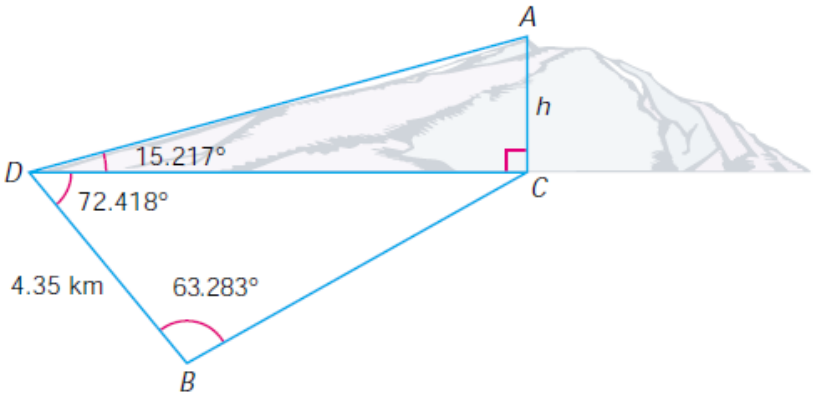
Final Answer(s):

(E) Detailed In Class Example #2 Showing HOW to Organize a Solution

From the top of a lighthouse, 30 m above the sea, the angle of depression to a tanker is 31° and the angle of depression to a sailboat is 20°. From the base of the lighthouse (sea level), the angle between the two lines of sight is 90°. How far apart are the tanker and the sailboat?

(F) Detailed In Class Example #2 Showing HOW to Organize a Solution

16. A surveyor uses a diagram to help determine the height, h, of a mountain.

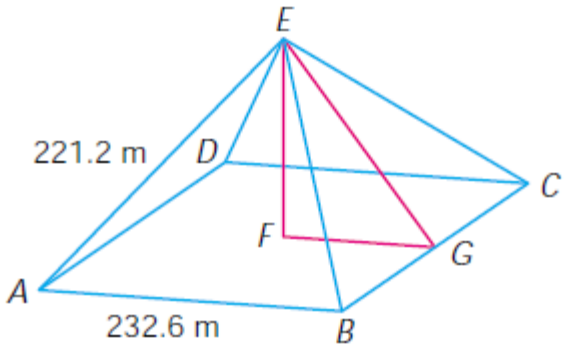


(G)Detailed In Class Example #2 Showing HOW to Organize a Solution

The Great Pyramid at Giza in Egypt has a square base with sides of 232.6 m long. The distance from the top of the pyramid to each corner of the base was originally 221.2 m. Determine the:

(a) volume of the pyramid.

(b) surface area of the pyramid.



(H)Detailed In Class Example #2 Showing HOW to Organize a Solution

Two roads intersect at an angle of 90°. Two cars leave the intersection, each on a different road. One car travels at 90 km/h and the other car at 120 km/h. After 20 min, a police helicopter 1000 m directly above and between the cars, notes the angle of depression of the slower car is 14°. What is the horizontal distance from the helicopter to the faster

(I) Detailed In Class Example #2 Showing HOW to Organize a Solution

18. Joanne and Sandy are hiking from Cedar Camp to Lookout Point along the hiking trail shown.

Cedar Camp is 2.5 km from Old Side Road along Maple Road, which runs flat. The hiking trail makes an angle of 30° with Maple Road and climbs at an average angle of elevation of 15°.

a) How far apart would Cedar Camp and Lookout Point appear, according to a normal map?

b) What distance do the hikers actually walk? Why are these answers different?

c) What is the difference in elevation between Lookout Point and Cedar Camp?

d) What is the average angle of elevation of the section of Old Side Road that is shown?