

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

- a. Believe it or not, Mr. S. is a superhero in his spare time (when he is not busy writing lessons for his beloved “other favorite” class of course). So one night (it was a Thursday I recall), I was standing on top of a building (as is my superhero duty - watching over the city of course), when I happen to notice the evil Dr. MathNoLikius on top of a building, close to the one I was on. So I quickly used my InfraRed Supervision and I quickly determined that the angle of elevation of my line of sight to Dr. MathNoLikius was  $12^\circ$ . I also quickly determined that the angle of depression to the base of the building upon which Dr. MathNoLikius was standing happened to be  $34^\circ$ . Amazingly enough, I also knew that the two buildings were 150 meters apart (Wow, imagine that!!)
- i. So being a superhero, I was able to use my trig knowledge to determine the height of the building that the evil Dr. MathNoLikius was standing upon to be 356.6 m. Was I correct? Correct me if I was wrong (HAHAHAHAHAHA)
- ii. But I also needed to know exactly the direct distance between me and the evil Dr. M. (as of course I would FLY there – or at least jump in a single bound – well, maybe attempt to anyway). Anyway, once again, I used my super trig powers to calculate that distance to be 600 meters. Was I right???

**(B) Solution:**

Diagram: to visualize the problem and organize the given info

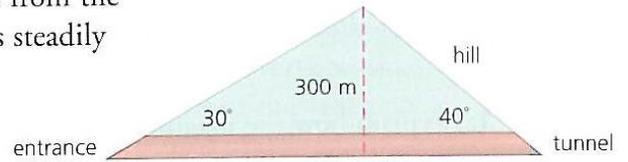
Step 1: What needs to be done??

Step 2: What needs to be done???

Final Answer(s):

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

19. **Thinking, Inquiry, Problem Solving:** A tunnel is being dug through a hill. Ventilation shafts must be placed every 70 m from the entrance to the tunnel. On one side, the hill climbs steadily upward at an angle of  $30^\circ$ . The hill is steeper on the other side, which has a slope of  $40^\circ$ . The top of the hill is 300 m high.



- (a) How many shafts must be drilled?  
 (b) Special corrugated metal pipes are used to line the shaft. These pipes come in 5 m sections. How many sections should the builder order?