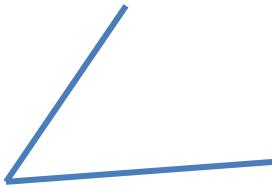


Accelerated Math 1. Homework 22.

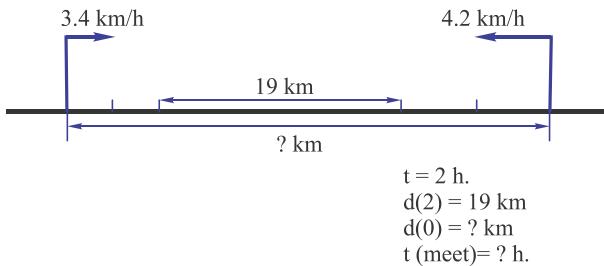


1. Construct an angle congruent to the angle below. Do not use protractor, you can only use the straight edge and compass.

Hint: use your knowledge about the criteria of congruency of the triangles, and how to construct a triangle with 3 given side. Please be able to explain your solution.



2. Mark three points not lying on a straight line. Draw a circle passing through these three points.
3. How much of heavy (20% fat) cream I need to add to the 1 liter (1000g) bottle of reduced fat (2% fat) milk, to increase the fat content to 3.25 % (whole milk)?
4. Two friends starting walking toward each other with the speeds of 3.4 km/h and 4.2 km/h. In 2 hours the distance between them is 19 km. What was the distance between them at the beginning? How long did it take for them to meet?



5. On the island of knights and knaves, you meet two inhabitants: Zoey and Mel. Zoey tells you that Mel is a knave. Mel says, "Neither Zoey nor I are knaves." So who is a knight and who is a knave?
6. On the island of knights and knaves, you meet two inhabitants: Sue and Zippy. Sue says that Zippy is a knave. Zippy says, "I and Sue are knights." So who is a knight and who is a knave?
7. On the island of knights and knaves, you meet two inhabitants: Bart and Ted. Bart claims, "I and Ted are both knights or both knaves." Ted tells you, "Bart would tell you that I am a knave." So who is a knight and who is a knave?
8. A traveler to the island of Knights and Knaves meets a group of five people (call them A, B, C, D, E).
 A says: "exactly one of us is a Knight"
 B says: "exactly two of us are Knights"
 C says: "exactly three of us are Knights"
 D says: "exactly four of us are Knights"
 E says: "all five of us are Knights"
 Can you find out which of them are Knights?

Some of the questions of this assignment refer to the famous (among logic puzzle fans) island of Knights and Knaves. On this island, there are two kinds of people: Knights, who always tell the truth, and Knaves, who always lie. Unfortunately, there is no easy way of knowing whether a person you meet is a knight or a knave...

Copyright notice: most of these problems come from books of Raymond Smullyan. If you liked them, get his books in the library and you will find there many more puzzles of the same sort. You can also find a number of such puzzles online at <http://philosophy.hku.hk/think/logic/puzzles.php>