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- (1) A driver covers the distance between two cities at a speed of 60 km per hour, on the return route the driver does 40 km an hour. Find the average speed. (Hint: the answer is NOT 50 mph).
- (2) Find the greatest common divisor and least common multiple of 132 and 90.
- (3) Solve the following equation: $5 - 2(1 - x) = 9$.
- (4) On the island of knights and knaves, you meet two inhabitants: Zoi and Mel. Zoi tells you that Mel is a knave. Mel says, "Neither Zoi nor I are knaves." So who is a knight and who is a knave?
- (5) 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?
- (6) 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?
- (7) You meet two inhabitants: Betty and Peggy. Betty tells you that Peggy is a knave. Peggy tells you, 'Betty and I are both knights.' Can you determine who is a knight and who is a knave?
- (8) You meet two inhabitants: Zed and Peggy. Zed says that Peggy is a knave. Peggy tells you, 'Either Zed is a knight or I am a knight.' Can you determine who is a knight and who is a knave?
- (9) You meet two inhabitants: Zed and Alice. Zed tells you, 'Alice could say that I am a knight.' Alice claims, 'It's not the case that Zed is a knave.' Can you determine who is a knight and who is a knave?
- (10) 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?
- (11) You are in a maze on the island of knights and knaves. There are two doors: you know that one leads to freedom and one leads to certain doom. There are two guards nearby, and you happen to know that one is a knight and one is a knave, but you don't know who is who. They allow you to ask one of them a single question before you choose a door — what do you ask?