1. Yes, the value d will prove that the author of the joke was Joe and not Tom. As long as the secret key is kept secret, Lisa can be sure that Joe sent the message. The cryptographic algorithm *h* ensures that message *x* modifications will have a high chance of changing the hash itself, therefore non-decryptable by the secret key.
2. Asdda
3. 1008 passwords. 1008 times 10-9 = 10000000 seconds to crack
4. Asdda
5. Eve needs to examine each of the 100 password-salt combos with the 500,000 word dictionary, therefore trying 50,000,000 times to run the dictionary attack.