

The Trading Post

You are an intrepid explorer in the world of Minecraft. You have just emerged from a long underground expedition and find yourself in a massive desert with a single well and a lonely trading post. Nevertheless you decide to make it your new home. You only have one problem - you have no dirt with which to grow your crops! Digging for dirt below the sand sounds like a lot of work so you head to the trading post to see what's available.

The trading post, called Frannie's, is run by a friendly young woman. She says that she will accept one item at a time and give you back resources (diamonds, iron ore, cobblestone, etc.) equal to its value. Dirt blocks are always the base unit but the value of the other resources changes as adventurers come and go. Some days Frannie runs out of a certain resource or adds a new one but she will always have dirt. This is what you see posted for today:

1 diamond = 180 dirt blocks

1 piece of iron ore = 36 dirt blocks

1 piece of coal = 12 dirt blocks

1 cobblestone block = 4 dirt blocks

1 wood block = 2 dirt blocks

1 dirt block = 1 dirt block

It frustrates you to find out that Frannie will always give you the smallest number of resources possible. If there is a tie for the smallest combination of resources she will choose the one that uses the highest value resources. Confused, you ask her what she would give you for your enchanted diamond pickaxe. She takes your pickaxe, looks it over, and mutters, "Hmm. Efficiency four, unbreaking three, made of diamond." After thinking for a moment she looks up at you and says, "My appraisal of your pickaxe is 836 dirt blocks. In exchange for your pickaxe I would give you four diamonds, three iron ore, and one coal." You respond, "So by making trade after trade could I eventually reduce an item into dirt blocks?" Frannie nods and tells you that it would take you seven-hundred twenty-four trades to convert your pickaxe into dirt.

Write a program to help you figure out how many trades it will take to reduce an item into dirt blocks. The program will read from an input file. The first line is the

number of tests in the file, followed by two lines per test. The tests have no relation to each other. The first line of a test is comma-separated list of integers representing the value of that test's resources. The second line of a test is the value of the item you are trading. For each test print out the number of trades needed to get down to dirt blocks followed by a newline. Here are several examples:

This example is how the pickaxe trade above would be represented:

Input File	Input Explanation	Output
1 180, 36, 12, 4, 2, 1 836	One test Six resources worth 180, 36, 12, 4, 2, 1 You are trading an item worth 836	724

Input File	Input Explanation	Ouput
1 1, 2, 3, 7, 8 10	One test Five resources worth 1, 2, 3, 7, 8 You are trading an item worth 10 HINT - receiving 7 and 3 for the first trade is wrong	8

Input File	Input Explanation	Ouput
2 4, 1 12 1 12849	Two tests First test: Two blocks worth four and one The item is worth 12 Second test: One block worth one The item is worth 12849	4 1

Your input should come from a file named trading_post.in

Your output should go to standard out.