

Some Mastermind Puzzles

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What is it

Remember Mastermind (the board game, not the TV quiz)? You try to guess a secret code, using colours (possibly repeated) stuck in some number of positions, or holes. In examples shown here, there are 3, 4 or 5 colours chosen from: Red, Green, Blue, Yellow and Pink, and 3, 4 or 5 positions to fill.

Each go, you make a guess - a sequence of colours, possibly repeated, such as **RGB**. This is then scored against the secret code, giving a number of **black pegs** and a number of **white pegs**.

1. You are given a *black peg* for an exactly correct colour - the correct colour in the correct place. Of course, you are not told which position(s) contain the correct colour, simply how many positions contain the correct colour.
2. You are given a *white peg* for a misplaced colour - the correct colour but in a different place.

So, for example, if the secret code was:



and you guessed:



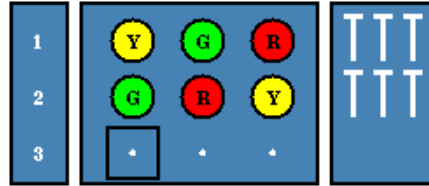
Then you would score **1 black peg** for the exactly correct Red in the third position, and **1 white peg** for the misplaced Yellow in the second position (matching the secret code's Yellow in the first position). This score would be shown as:



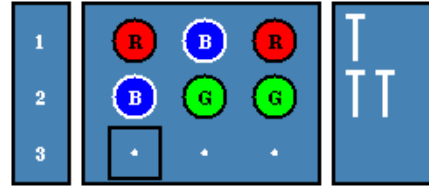
What To Do

For each example, your task is to find a “next guess” that is compatible with all previous guesses and their scores. There is exactly one such compatible guess for each (which is of course the secret code):

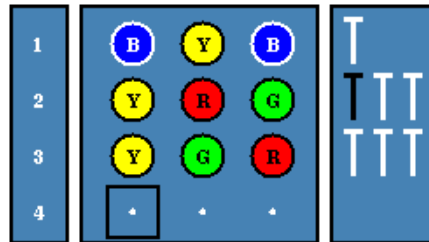
Example 1: 4 colours: R,G,B,Y



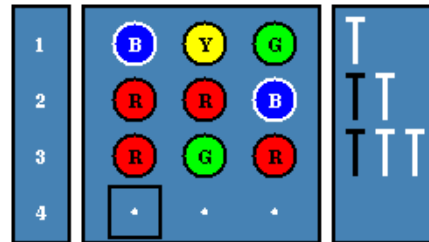
Example 2: 4 colours: R,G,B,Y



Example 3: 4 colours: R,G,B,Y



Example 4: 4 colours: R,G,B,Y



Example 5: 3 colours: R,G,B

