The object of each puzzle below is to determine which of the given weights goes in each place on the bars to make the structure balance. Here's how it works: For each weight that hangs off a balanced bar, take its weight and multiply it by its distance (in unit spaces) from the balancing cord. The sum of these numbers for the portion of the bar on each side of the cord must be the same to make it balance. (Assume the weights of the bars and cords are negligible.) For example, the lower bar in the example at right balances because the left side has a weight of 3 that is 2 units away from the cord (a total of 3x2=6), while the right side has a weight of 2 that is 1 unit away and a weight of 1 that is 4 units away, for a sum of (2x1) + (1x4) = 6, the same total as the left side. The upper bar also balances, because on the left side there is a weight of 6 (the 3, 2, and 1 all added together) at a distance of 2 units (the weight pulls from where the balancing string is), to make a total of 6 x 2 = 12, while the right side has a weight of 4 that is 3 units away, for a total of 4 x 3 = 12, the same total as the left side. The lengths of the cords holding the weights are irrelevant. Below are three puzzles for you to try. They get progressively harder, the last one for heavy-duty solvers only.