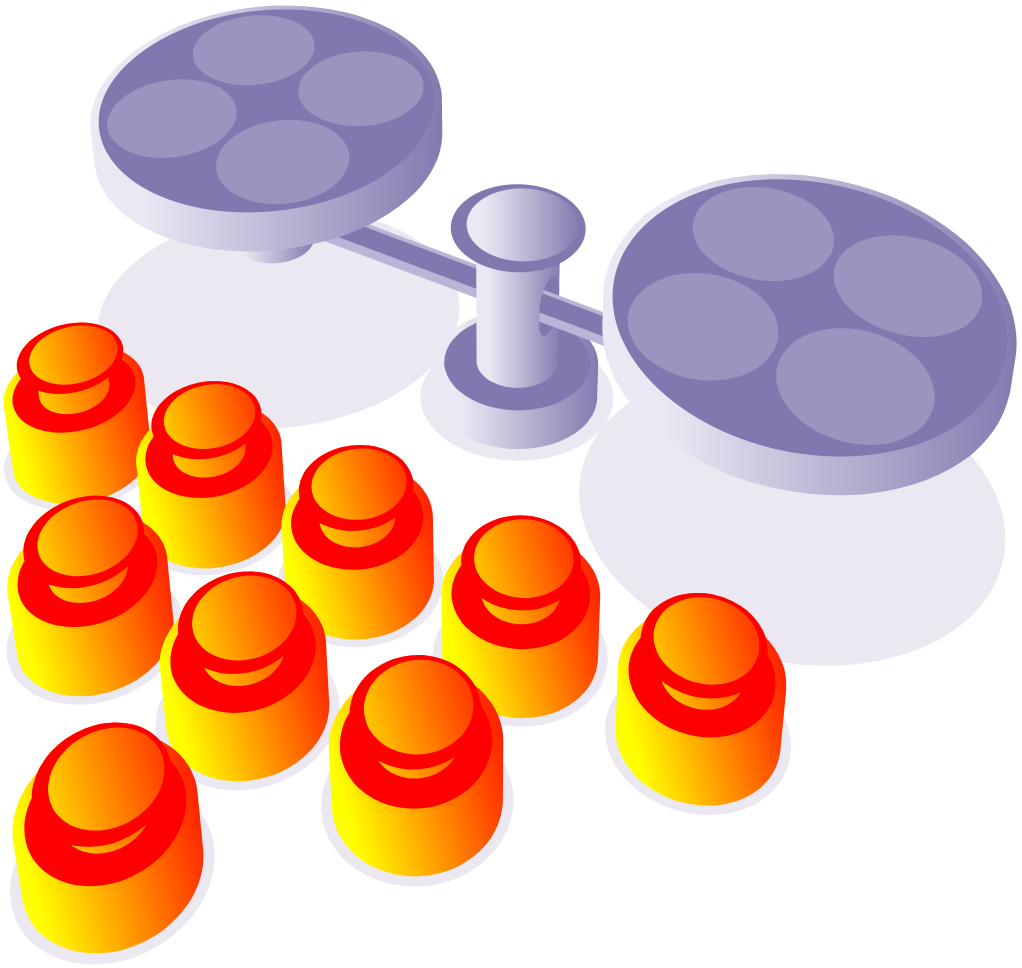
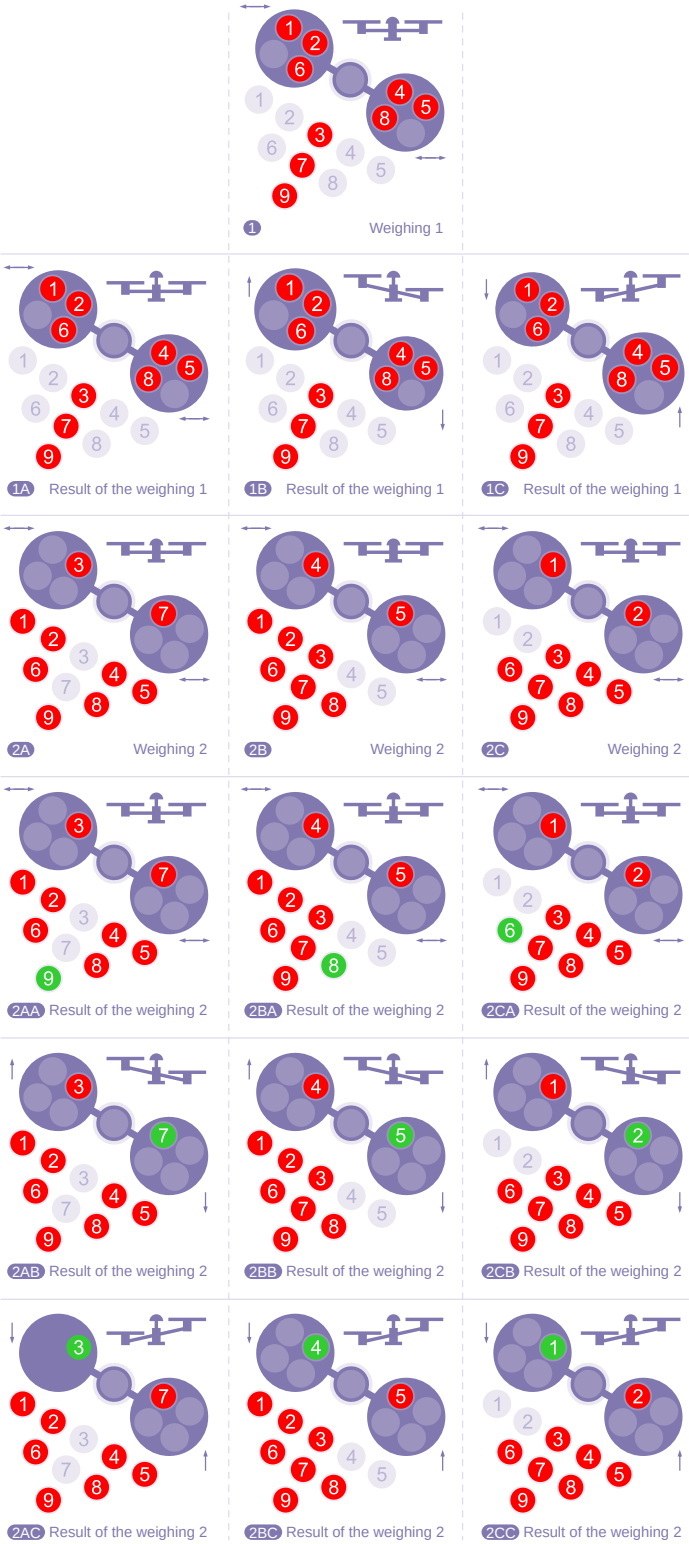
Heavy Weight



There is a set of nine identical weights and simple scales (without any measures) - just as shown in the illustration. It is known that one weight is a little bit heavier than the eight others.

Using only the scales can you identify the heavier weight in two weighings only?



To identify the heavier weight in two weighings perform the following sequence of moves as shown in the illustration.

First divide all the weights into three triplets. Weigh one triplet against another - see Weighing 1 in the top left corner of the illustration above. There can be three different results of the weighing 1 - phases 1A, 1B and 1C respectively (see the illustration).

If the result is phase 1A, then choose any two weights from the third triplet and weigh one weight against another - this will be the second weighing (phase 2A). If the result after the second weighing is phase 2AA then the heavier weight is the one left from the third triplet. If the result is either of the phases 2AB and 2AC, then the heavier weight is the one on the lower pan.

If the result after the first weighing is either of the phases 1B and 1C, then choose any two weights from the triplet on the lower pan and then weigh one weight against another - this will be the second weighing (phases 2B and 2C respectively). If the result after the second weighing is phase 2BA (or 2CA respectively) then the heavier weight is the one left from the triplet taken from the lower pan after the first weighing. If the result is either of the phases 2BB and 2BC (2CB and 2CC respectively), then the heavier weight is the one on the lower pan.