Problem of the Week
Problem B
These are Sum Products

Ahmed has two number cubes which he rolls ten times. Each of the 10 rolls gives a different combination of the two numbers on the top face (Note, for example, that 5 on the first cube and 1 on the second cube is the same combination as 1 on the first cube and 5 on the second cube). Ahmed finds the product of each pair of numbers and then sums the ten resulting products.

a) Complete the chart of products.

b) What is the set of ten rolls with the lowest possible sum of the products?

c) What is the set of ten rolls with the highest possible sum of the products?

d) Determine 2 different possible sets of ten rolls such that the sum of products is equal to 100. The first set must include every possible roll involving a 3 on at least one of the cubes. The second set must not include any roll with a 3 on either cube.

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\begin{array}{cccccc}
1 & 2 & 3 & 4 & 5 & 6 \\
1 & 1 & 2 & 3 & 4 & 5 & 6 \\
2 & 2 & 4 & 6 & 8 & 10 & 12 \\
3 & 3 & & & & & \\
4 & 4 & & & & & \\
5 & 5 & & & & & \\
6 & 6 & & & & & \\
\end{array}
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