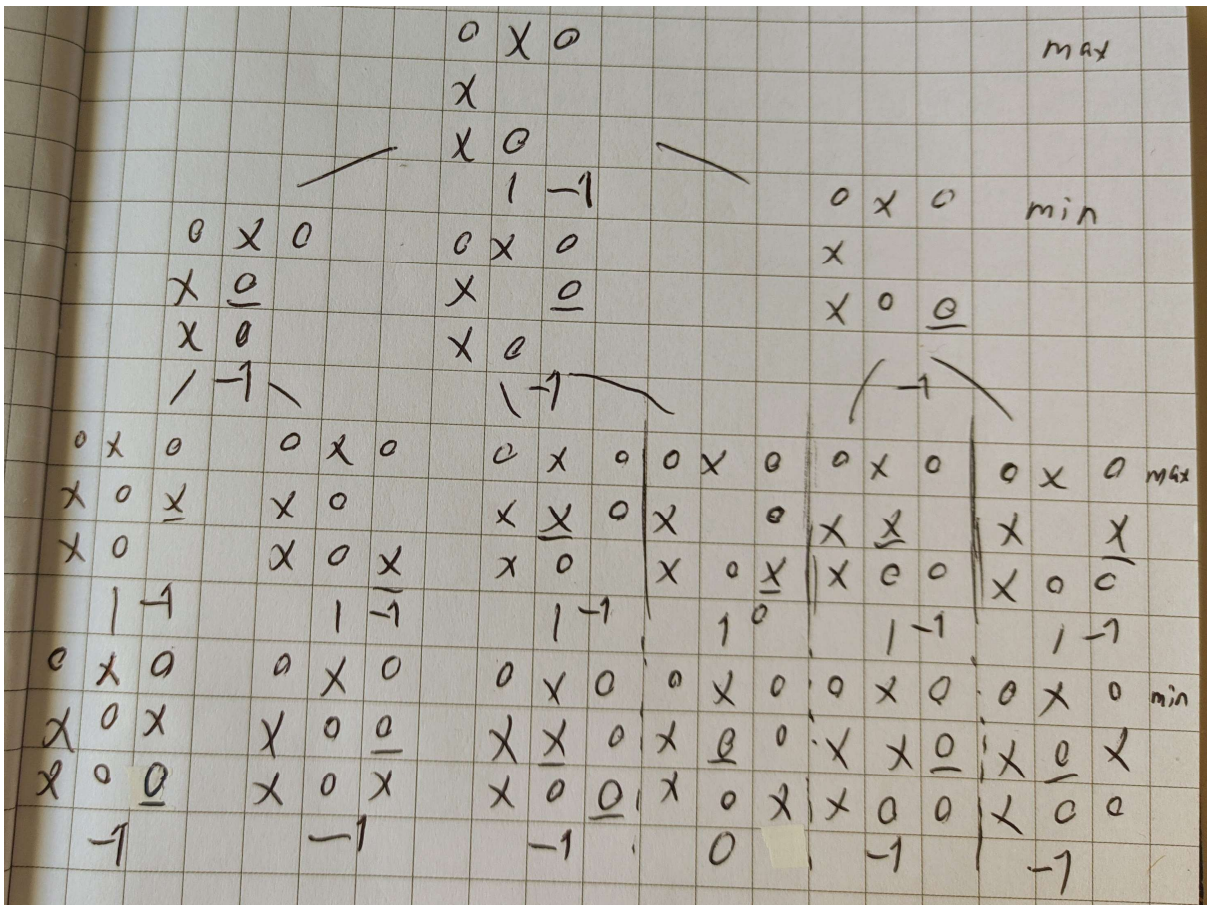
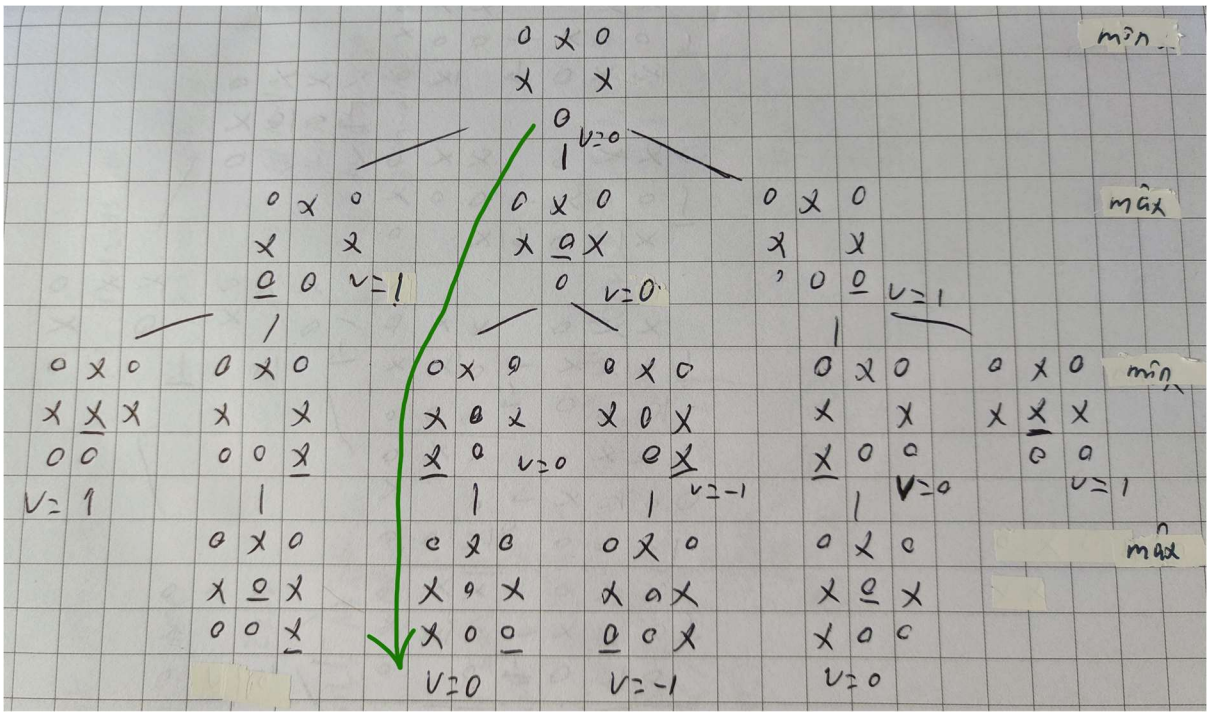
Ex 2:



Ex 3:



Ex 5:

1. $P(\text{both outcomes are } 6) = \frac{1}{6} * \frac{1}{2} = \frac{1}{12}$
2. $P(\text{neither outcome is } 6) = P(\text{unloaded dice isn't } 6) * P(\text{loaded dice isn't } 6) = \frac{5}{6} * \frac{1}{2} = \frac{5}{12}$
3. $P(\text{the sum of the outcomes equals } 9)$. Acceptable combinations are 3+6, 4+5, 5+4, 6+3. There is a total of 6^2 combinations. Because the odds for these specific combinations are $\frac{1}{6} * \frac{1}{10} + \frac{1}{6} * \frac{1}{10} + \frac{1}{6} * \frac{1}{10} + \frac{1}{6} * \frac{1}{10} = 4\left(\frac{1}{6} * \frac{1}{10}\right) = \frac{1}{15}$, we can write $P(\text{the sum of the outcomes equals } 9) = \frac{1}{15}$.
4. $P(\text{the sum of the outcomes equals } 9 \mid \text{at least one outcome is } 6)$. Since at least one outcome is 6, the possible combinations are 6+1, 6+2, 6+3, 6+4, 6+5, 6+6. Of these only 6+3 has the total value of 9. Of all 6s, ¾ are loaded and ¼ are not due to the loaded dice's probability being 3x of the unloaded's. This means that the odds for a three after a six is:
$$\frac{3}{4} * \frac{1}{12} + \frac{1}{4} * \frac{1}{6} = \frac{3}{48} + \frac{1}{24} = \frac{3}{48} + \frac{2}{48} = \frac{5}{48}$$
$P(\text{the sum of the outcomes equals } 9 \mid \text{at least one outcome is } 6) = \frac{1}{6}$.
5. $P(\text{at least one outcome is } 6 \mid \text{the sum of the outcomes equals } 9) = \frac{P(\text{the sum of the outcomes equals } 9 \mid \text{at least one outcome is } 6)P(\text{at least one outcome is } 6)}{P(\text{the sum of the outcomes equals } 9)} = \frac{\frac{5}{48} * \frac{7}{12}}{\frac{1}{15}} = \frac{175}{192} \approx 0.911 \ldots$

Ex 6:

1. 2: 1/36
   3: 2/36
   4: 3/36
   5: 4/36
   6: 5/36
   7: 6/36
   8: 5/36
   9: 4/36
   10: 3/36
   11: 2/36
   12: 1/36
2. 2: 1/144
   3: 2/144
   4: 3/144
   5: 4/144
   6: 5/144
   7: 1/9
   8: 5/48
   9: 7/72
   10: 13/144
   11: 1/12
   12: 1/4
3. $P(\text{the die is loaded} \mid \text{the sum of the outcomes is } 10) = \frac{P(\text{the sum of the outcomes is } 10 \mid \text{the die is loaded})P(\text{the die is loaded})}{P(\text{the sum of the outcomes is } 10)} = \frac{\frac{13}{144} * \frac{1}{2}}{(\frac{1}{2} * \frac{3}{36} + \frac{1}{2} * \frac{13}{144})} = \frac{13}{25} = 52\%$
4. ?

Ex 6.2 data: