1) There are 7 different sums of two four-sided die out of 16 total combinations, with 2 of those combos having a $\frac{1}{16}$, $\frac{2}{16}$ and $\frac{3}{16}$ chance and 1 with a $\frac{4}{16}$ chance of being rolled.

Therefore $\left(\frac{1}{16}\right)^2 + \left(\frac{2}{16}\right)^2 + \left(\frac{3}{16}\right)^2 + \left(\frac{4}{16}\right)^2 + \left(\frac{3}{16}\right)^2 + \left(\frac{2}{16}\right)^2 + \left(\frac{1}{16}\right)^2 = \frac{11}{64}$ chance of rolling the same sum of two four-sided die twice or approximately a 17.19%

2) $\left(\frac{1}{64}\right) + \left(\frac{1}{64}\right) + \left(\frac{3}{64}\right) + \left(\frac{3}{64}\right) + \left(\frac{3}{64}\right) + \left(\frac{3}{64}\right) + \left(\frac{6}{64}\right) = \left(\frac{5}{16}\right)$ or a 31.25% because there are 7 unique ways of totaling at least 9 and each way has either 1, 3 or 6 different combos of the same number. For example (3,3,3) can only be rolled 1 way while (3,4,2) has 6 different ways (4,3,2),(2,3,4) ect.

3)

4a) $\frac{30}{31} * \frac{29}{31} * \frac{28}{31} * \frac{27}{31} = \frac{657720}{923521} = 71.22\%$ chance they haven't caught at least two so therefore a 28.78% they have caught at least two small monsters of the same species

4b) $\frac{30}{31} * \frac{29}{31} * \frac{28}{31} * \frac{27}{31} * \frac{26}{31} * \frac{25}{31} = \frac{427518000}{887503681} = 48.17\%$ chance they haven’t caught at least two, therefore there’s a 51.83% chance for their sixth capture to have caught at least two monsters. Which is more likely than not (x>50%)

5)

6) $(\frac{1}{6} * \frac{6}{21}) + (\frac{1}{6} * \frac{5}{21}) + (\frac{1}{6} * \frac{4}{21}) + (\frac{1}{6} * \frac{3}{21}) = \frac{1}{7} = 14.29\%$, since two dice means $(\frac{1}{6} * \frac{1}{6}) = \frac{1}{36}$ chance for regular dice, but since one is unfair its $\frac{1}{6} * \frac{k}{21}$ chance instead. Then add the chances for each combo that total 9 (3+6,4+5,5+4,+6+3).

7) $(\frac{5}{11} * \frac{4}{10} * \frac{3}{9} * \frac{2}{8}) + (\frac{6}{11} * \frac{5}{10} * \frac{4}{9} * \frac{3}{8}) = \frac{2}{33}$ chance or a 6.06% chance all four kids take either only apples or only oranges. Since the first kid has a $\frac{5}{11}$ chance because there are 5 apples out of the 11 fruit which decreases after each child takes an apple. The same applies to the oranges

8) $21p^2(1-p)^5 = 35p^3(1-p)^4 -> \frac{21}{35} = \frac{p^3(1-p)^4}{p^2(1-p)^3} = \frac{3}{8}$ or a 37.5% chance of the coin landing on heads on a single toss