a. [31; 10, 10, 8, 7, 6, 4, 1, 1]

  i. 8   ii. 47   iii. 31   iv. 24   v. 32   vi. no   vii. no

viii. no

1b. [11: 9, 6, 3, 1]

  i. 4   ii. 19   iii. 11   iv. 10   v. 13   vi. no   vii. yes, P1

viii. yes P4

1c. [17: 9, 6, 3, 1]

  i. 4 ii. 19   iii. 17   iv. 10   v. 13   vi. no   vii. yes P1, P2, P3

viii. yes P4

1d. [30: 10, 9, 8, 8, 8, 6]

  i. 6   ii. 49   iii. 30   iv. 25   v. 33   iv. no   vii. no   viii. no.

2. [17: 9, 6, 3, 1]

a. {P1, P2, P3, P4}, {P1, P2, P3}, {P1, P2, P4} {P1, P3, P4}, {P2, P3, P4}
  {P1, P2}, {P1, P3} {P1, P4} {P2, P3}, {P2, P4} {P3, P4}, {P1}, {P2},
  {P3}, {P4}.

b. {P1, P2, P3, P4}, {P1, P2, P3}

c. P1: $\frac{2}{6}$ = 33.3%   P4: $\frac{0}{6}$ = 0% ← dummy.

  P2: $\frac{2}{6}$ = 33%

  P3: $\frac{2}{6}$ = 33%

d. <P1, P2, P3, P4>, <P1, P2, P4, P3>, <P1, P4, P2, P3>, <P1, P3, P2, P4>,
B. <P1, P3, P4, P2>, <P1, P4, P3, P2> <P2, P1, P3, P4>, <P2, P1, P4, P3>,
C. <P2, P4, P1, P3> <P2, P3, P1, P4>, <P2, P3, P4, P1>, <P2, P4, P3, P1>,
  <P3, P2, P1, P4>, <P3, P2, P4, P1>, <P3, P4, P2, P1>, <P3, P1, P2, P4>,
  <P3, P1, P4, P2>, <P3, P4, P1, P2>, <P4, P2, P3, P1>, <P4, P2, P1, P3>,
  <P4, P1, P2, P3>, <P4, P3, P2, P1>, <P4, P3, P1, P2>, <P4, P1, P3, P2>

f. $P1 = \frac{8}{24} = 33\%$ $P2 = \frac{8}{24} = 33\%$ $P3 = \frac{8}{24} = 33\%$ $P4 = 0\%$ ②
dummy.

2g. yes they do. in this case, they are identical

3. [39: 7, 7, 7, 7, 7, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]

notice that if all P1-P5 votes + 4 of the rest you get 35+4 = 39
but if only 4 of P1-P5 votes yes + all of the rest you get 28+10 = 38
which is not enough.

4. [271: 55, 38, 29, 29, 20, 20, 18, 16, 16, 15, 14, 13, 12, 11, 11, 11, 11, 10, 10,
10, 10, 9, 9, 9, 8, 8, 7, 7, 7, 6, 6, 6, 6, 6, 6, 5, 5, 5, 4, 4, 4, 4, 4, 3, 3,
3, 3, 3, 3, 3, 3]