

## Antwoorden Combinatoriek

1a	$12!$	7b	$4!$	21	$\binom{11}{4} \cdot \binom{8}{5} \cdot \binom{11}{6}$
1b	$\binom{12}{2}$	8	$20 \times 19 \times 18 \times 17$	22a	$6^3$
1c	$12 \cdot 11 \cdot 10 \cdot 9$	9	$\binom{13}{4} \cdot 2^9 \cdot 1^4$	22b	10
2a	$\binom{7}{3}$	10	$\binom{20}{3} \cdot \binom{10}{2}$	23a	$5!$
2b	1	11a	$11^{20}$	23b	$\frac{4!}{2!}$
2c	$\binom{11}{9}$	11b	$\binom{20}{6} \cdot 6^6 \cdot 5^{14}$	24	$\binom{5}{2}$
2d	$\binom{5}{2} \cdot \binom{6}{3}$	12	$\binom{10}{3} \cdot \binom{7}{4} \cdot \binom{5}{2}$	25	20
3a	$\binom{10}{3}$	13	$\frac{1}{2} \cdot (11 \times 11 - 11)$	26	$10 + 9 \times 9 + 9 \times 9 \times 8 = 789$
3b	$\binom{12}{2} \cdot \binom{10}{1}$	14	$4 \times (1 + 2 \times 3) \times 4 = 112$	27	$\binom{5}{3}$
3c	$\binom{22}{3}$	15	$\binom{10}{7} \cdot 3^3 \cdot 1^7$	28	$x^7 - 7x^6 + 21x^5 - 35x^4 + 35x^3 - 21x^2 + 7x - 1$
4a	$\binom{6}{2} = \binom{6}{4}$	16	$\binom{3}{1} \cdot \binom{4}{1} \cdot \binom{2}{1}$	29	$(1+1)^n = 2^n$
4b	$\binom{5}{2} = \binom{5}{3}$	17	$\frac{1}{2} \cdot 60 \cdot 59 = 1770$	30	$50 \times 49$
4c	$\binom{6}{2}^{-5}$	18	$\binom{6}{3} = 20$	31	$\binom{6}{5} \cdot \binom{35}{1}$
5	$\binom{5}{2} \times 2 = \binom{5}{3} \times 2$	19a	$\binom{8}{2} = \binom{8}{6}$	32	2
6	$10 \times 9 \times 8$	19b	$\frac{1}{2} \cdot \binom{8}{4}$	33	$a^{10} - 5a^8 + 10a^6 - 10a^4 + 5a^2 - 1$
7a	$4!$	20	$10 \times 9 \times 8$	34	$\binom{6}{3}$

35	$1 \times 3 + 1 + 1 \times 3 = 7$	49	$\binom{6}{5} \cdot \binom{35}{1}$	64	$\frac{\binom{N-K}{2} \binom{K}{1}}{\binom{N}{3}}$
36	$\frac{4!}{2!}$	50	$\binom{9}{6}$	65	$\frac{8 \cdot 7}{2} + 8 = 36 = \frac{8 \cdot 8 - 8}{2} + 8$
37	$2^{10}$	51	3.4.6.2	66a	$\frac{4}{36}$
38	$\frac{5!}{2!}$	52	$\binom{7}{2} + \binom{7}{5}$	66b	20
39	$\binom{9}{2} + \binom{9}{7} = 72$	53	2, 6 en 12	67a	$\binom{1}{1} \cdot \binom{6}{1} + \binom{2}{2}$
40	6!	54	$\binom{50}{2} \cdot 2 = 40 \times 40 - 40$	67b	$\binom{1}{1} \cdot \binom{6}{2} + \binom{2}{2} \cdot \binom{6}{1} + \binom{3}{2} \cdot \binom{2}{1}$
41	$\frac{10!}{3! \cdot 2! \cdot 2! \cdot 2!} = 75600$	55	$\binom{24}{2}$	68	$\binom{6}{2} \cdot \binom{35}{4}$
42	36	56	$\binom{24}{2}$	69	$26 \times 25 \times 24 \times 23 \times 10 \times 10$
43	$\binom{9}{4} = \binom{9}{5} = 126$	57	6	70	$\binom{13}{2} \cdot \binom{39}{1}$
44	$\binom{10}{4} \cdot \binom{7}{2} \cdot \binom{6}{3}$	58	$\binom{5}{2} \cdot \binom{2}{1} \cdot \binom{3}{0}$	71a	14
45	81 mogelijkheden, 36 thuiswinst en 9 gelijk dus 45	59	$\frac{5!}{2!}$	71b	3
46	$\binom{12}{8} \cdot 1^8 \cdot 4^4$	60	$\binom{13}{11} \cdot 4$	72	$2^{10} - 1 - 10$
47 a	$\binom{10}{5}$	61	$\binom{30}{11} \binom{19}{7} \binom{12}{12}$	73	$x^5 + 5x^4 + 10x^3 + 10x^2 + 5x + 1$
47 b	$\binom{10}{6} = \binom{10}{4}$	62	$\binom{5}{3} = \binom{5}{2}$	74	8952
48	$10 \times 9 \times 8 \times 7$	63	$\binom{100}{30}$	75	$\frac{5!}{2!}$