Lösungen / Statistik 1/03

```
Remove["Global`*"]
```

1.

```
<< Statistics`DescriptiveStatistics`
```

```
a = {1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2,
   2, 2, 3, 3, 3, 3, 3, 3, 3, 4, 4, 4, 5, 5, 6, 6, 7, 8, 9, 10};
b = {1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2, 3, 3, 3, 3, 3,
   3, 3, 4, 4, 4, 5, 5, 6, 6, 7, 8, 9, 10, 500001};
```

```
LocationReport[a] // N
```

```
{Mean → 3.36364, HarmonicMean → 2.08918, Median → 3.}
```

```
LocationReport[b] // N
```

```
{Mean → 14709.2, HarmonicMean → 2.15249, Median → 3.}
```

```
Mean[b] - Mean[a] // N
```

```
14705.8
```

```
Median[b] - Median[a] // N
```

```
0.
```

2.

```
c = {{2, 3}, {3, 5}, {1, 3}, {4, 6}, {1, 6},
   {1, 6}, {2, 2}, {4, 6}, {4, 6}, {5, 6}, {1, 1}, {2, 6},
{2, 5}, {1, 1}, {2, 5}, {1, 4}};
```

```
<< Statistics`DataManipulation`
```

```
Frequencies[c]
```

```
{{2, {1, 1}}, {1, {1, 3}}, {1, {1, 4}}, {2, {1, 6}}, {1, {2, 2}},
 {1, {2, 3}}, {2, {2, 5}}, {1, {2, 6}}, {1, {3, 5}}, {3, {4, 6}}, {1, {5, 6}}}
```

```
hG = Length[c]
```

```
16
```

```
hA = 10; hB = 5; hAandB = 4;
```

```
hAorB = hA + hB – hAandB
```

```
11
```

2.

```
htotal = 6^6
```

```
46656
```

a

```
hA = 2 ((1 * 1 * 6) * 3 * 6^3)
```

```
7776
```

```
hA / htotal
```

$$\frac{1}{6}$$

```
hA / htotal // N
```

```
0.166667
```

b

```
hB = 2 ((1 * 1 * 5) * 3 * 6^3)
```

```
6480
```

```
hB / htotal
```

$$\frac{5}{36}$$

```
hB / htotal // N
```

```
0.138889
```

c

```
hC = htotal – hA + hB
```

```
45360
```

```
hC / htotal // N
```

```
0.972222
```

4.

```
g = 100; a = 50; b = 45; aUnionb = 80; aIntersb = 50 + 45 - 80
```

```
15
```

5.

```
r1 = 7 / 10; r2 = 6 / 9;
```

```
r12 = r1 r2
```

$$\frac{7}{15}$$

```
N[%]
```

```
0.466667
```

6.

```
p = 4 / 36 3 / 35
```

$$\frac{1}{105}$$

```
N[%]
```

```
0.00952381
```

7.

```
? Bin*
```

System`

```
BinaryFormat BinaryRead     BinaryWrite
BinaryGet    BinaryReadList Binomial
```

Statistics`DataManipulation`

```
BinCounts BinLists
```

Total Möglichkeiten / Total possibilités

```
total = Binomial[42, 6]
```

```
5245786
```

Exakt richtige 4 der 6 heisst zudem 2 falsche von 38 / exactement 4 de 6 juste signifie en plus 2 fauts de 38

```
e4 = Binomial[38, 2]
```

```
703
```

```
r4 = Binomial[6, 4]
```

```
15
```

```
e4 r4 / total
```

$$\frac{15}{7462}$$

```
N[%]
```

```
0.00201018
```

Exakt richtige 5 der 6 heisst zudem 1 falsche von 37/ exactement 5 de 6 juste signifie en plus 1 fauts d 37

```
e5 = Binomial[37, 1]
```

```
37
```

```
r5 = Binomial[6, 5]
```

```
6
```

```
e5 r5 / total
```

$$\frac{3}{70889}$$

```
N[%]
```

```
0.0000423197
```

Exakt richtige 6 der 6 heisst 0 falsche von 36/ exactement 6 de 6 juste dsignifie 1 fauts d 36

```
e6 = Binomial[36, 1]
```

```
36
```

```
r6 = Binomial[6, 6]
```

```
1
```

```
e6 r6 / total
```

$$\frac{18}{2622893}$$

```
N[%]
```

$$6.86265 \times 10^{-6}$$

Mindestens 4 richtige / au moins 4 justes

```
(e4 r4 + e6 r6 + e6 r6) / total
```

$$\frac{10617}{5245786}$$

N[%]

0.00202391