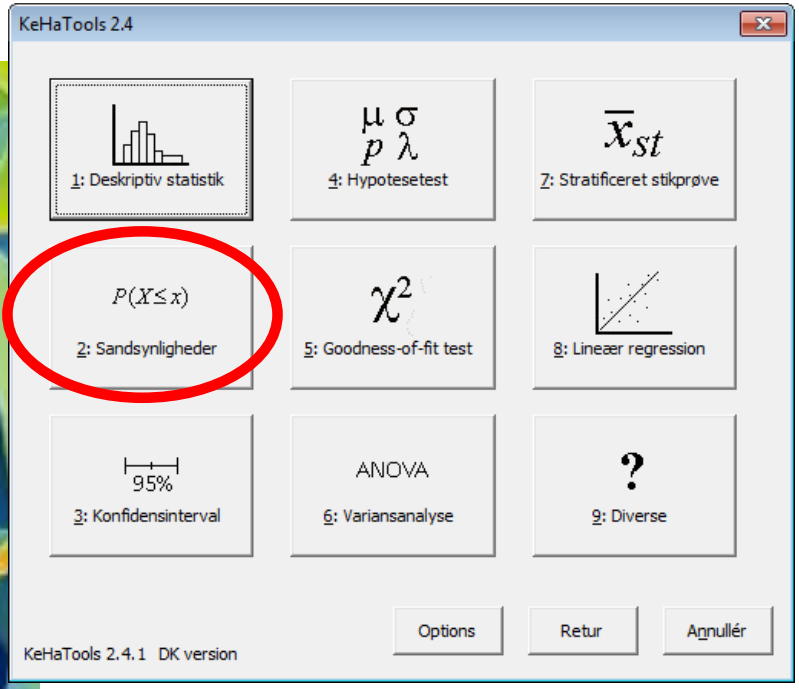


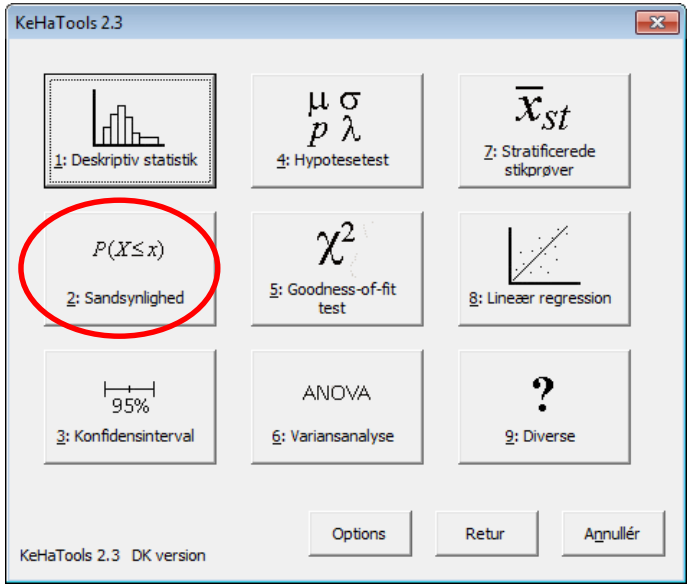
Videregående Statistik og KeHaTools Kapitel 9:

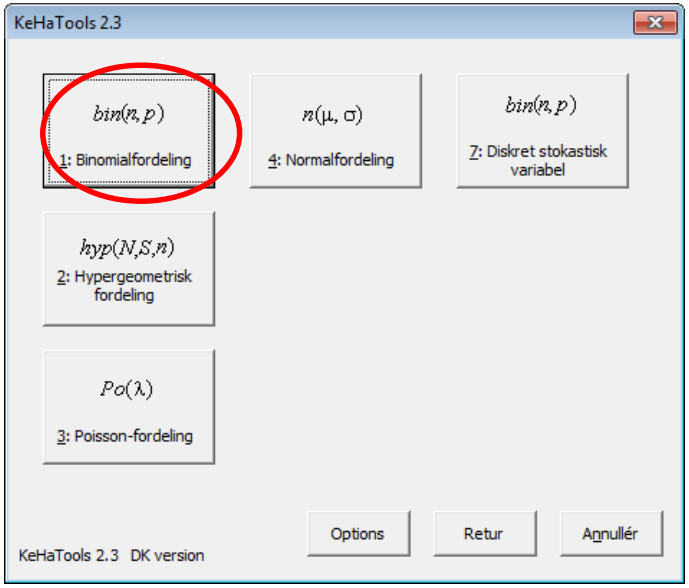
Diskrete fordelinger

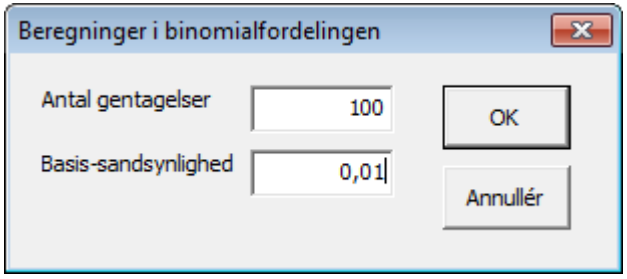
Oversigt

- Eksempel 9.1-9.2 binomialfordelingen
- Eksempel 9.4-9.5 den hypergeom. ford.
- Eksempel 9.8-9.9 Poisson-fordelingen
- Eksempel 9.10-9.11 test i Poisson-ford
- Eksempel 9.12 test i binomialford.

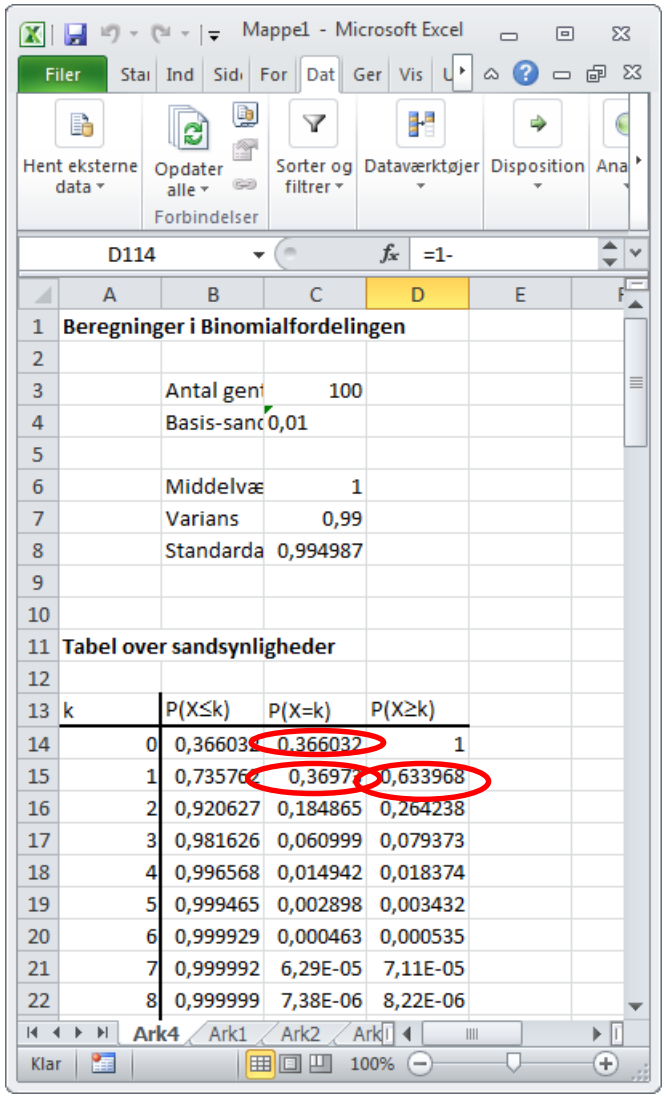
Eksempel 9.1 - I



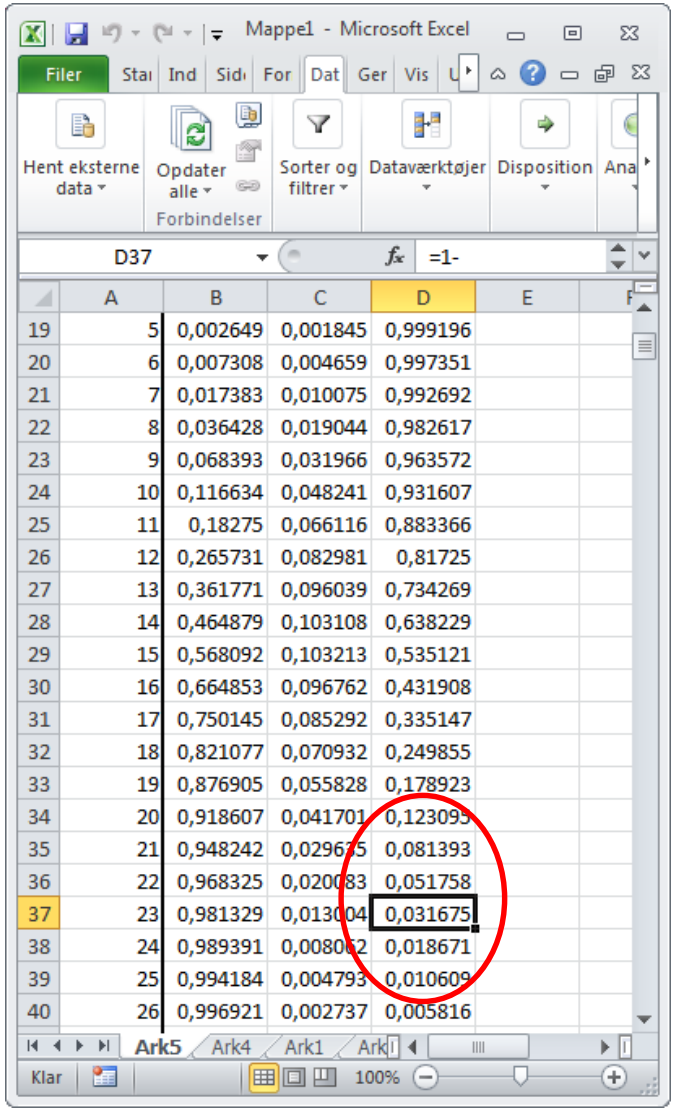




Eksempel 9.1 - II

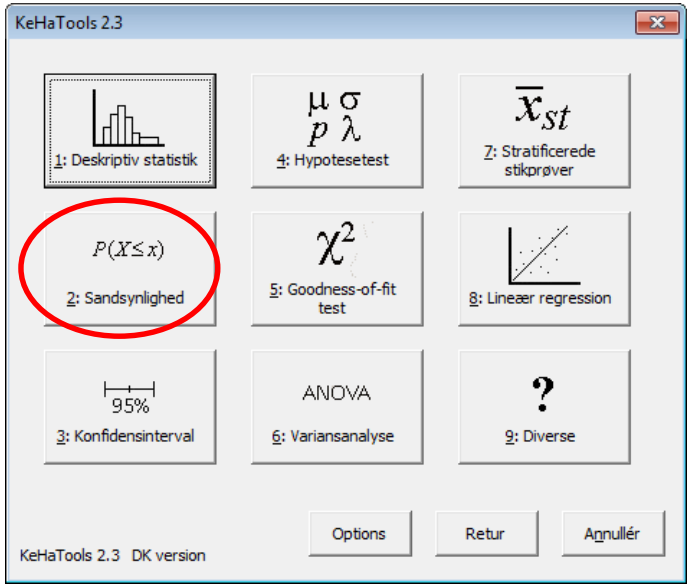


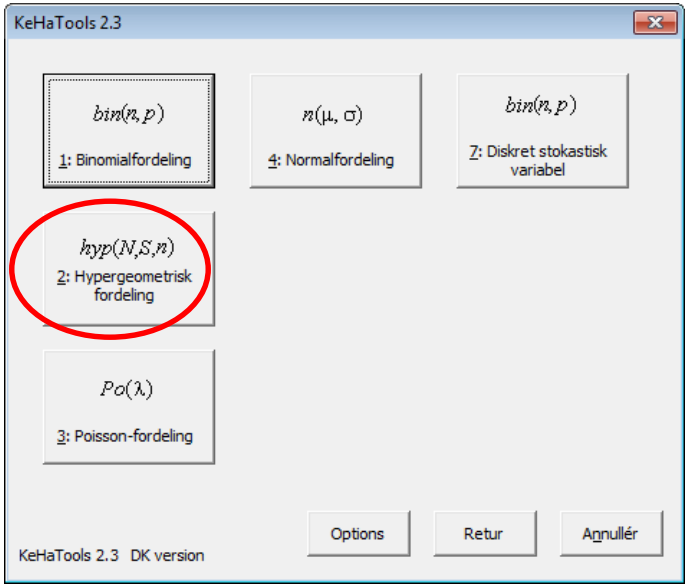
Eksempel 9.2

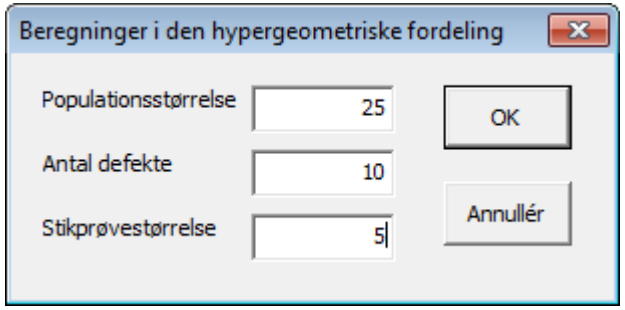


	A	B	C	D	E
19	5	0,002649	0,001845	0,999196	
20	6	0,007308	0,004659	0,997351	
21	7	0,017383	0,010075	0,992692	
22	8	0,036428	0,019044	0,982617	
23	9	0,068393	0,031966	0,963572	
24	10	0,116634	0,048241	0,931607	
25	11	0,18275	0,066116	0,883366	
26	12	0,265731	0,082981	0,81725	
27	13	0,361771	0,096039	0,734269	
28	14	0,464879	0,103108	0,638229	
29	15	0,568092	0,103213	0,535121	
30	16	0,664853	0,096762	0,431908	
31	17	0,750145	0,085292	0,335147	
32	18	0,821077	0,070932	0,249855	
33	19	0,876905	0,055828	0,178923	
34	20	0,918607	0,041701	0,123095	
35	21	0,948242	0,029675	0,081393	
36	22	0,968325	0,020083	0,051758	
37	23	0,981329	0,013004	0,031675	
38	24	0,989391	0,008062	0,018671	
39	25	0,994184	0,004793	0,010609	
40	26	0,996921	0,002737	0,005816	

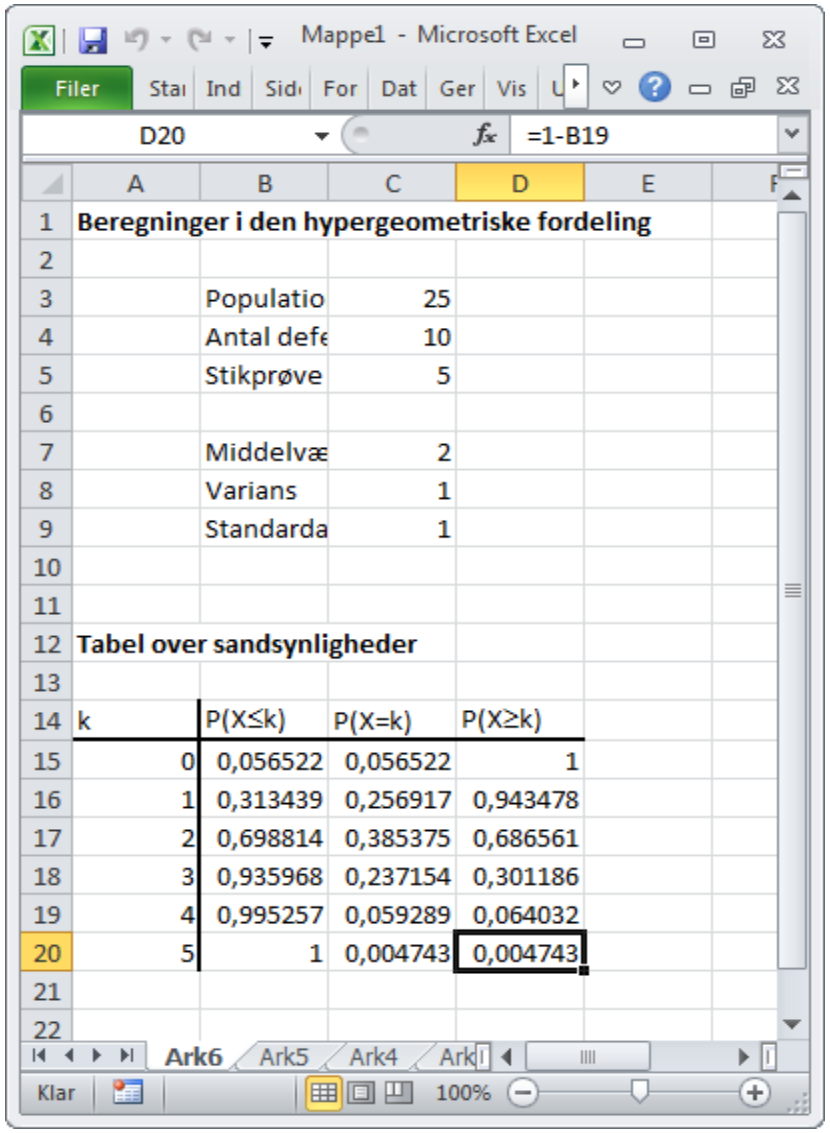
Eksempel 9.4 - I



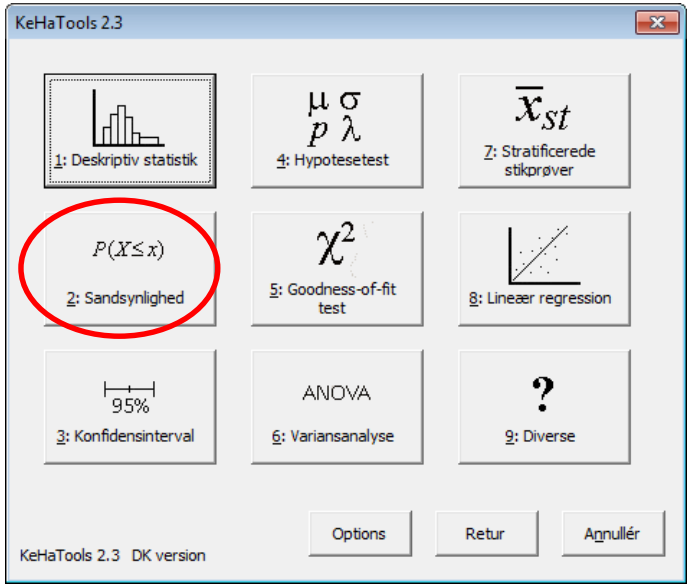


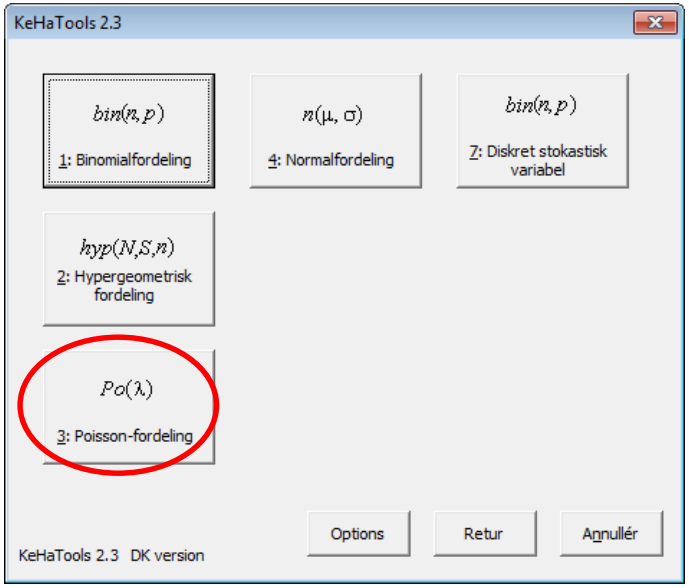


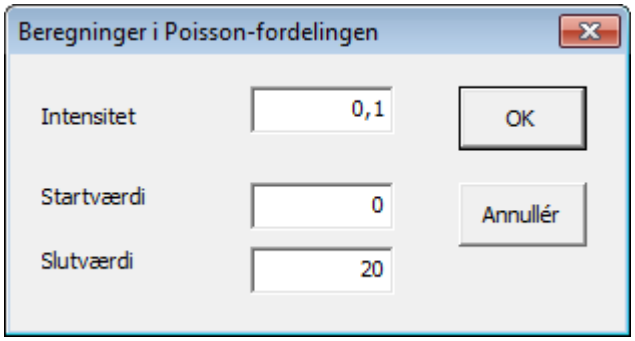
Eksempel 9.4 - II



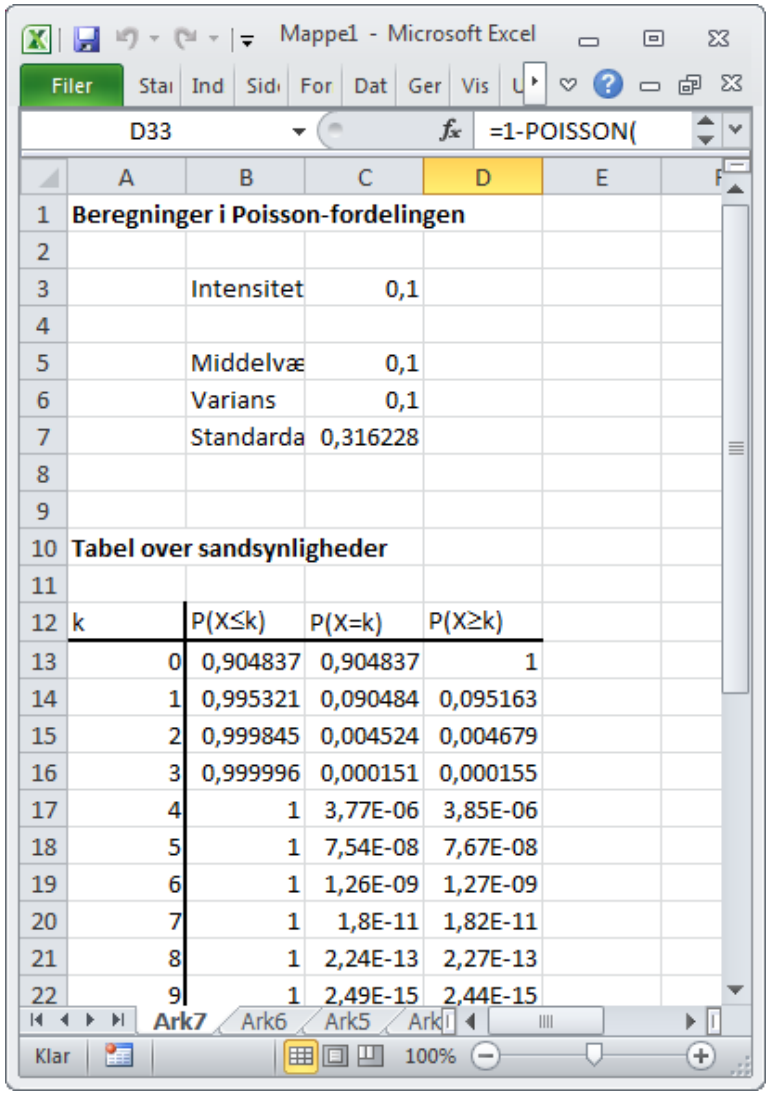
Eksempel 9.8 - I







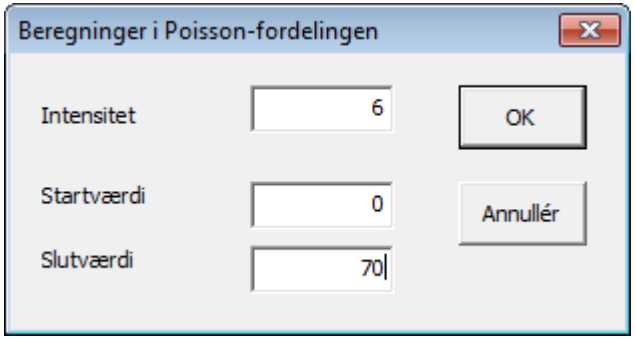
Eksempel 9.8 - II



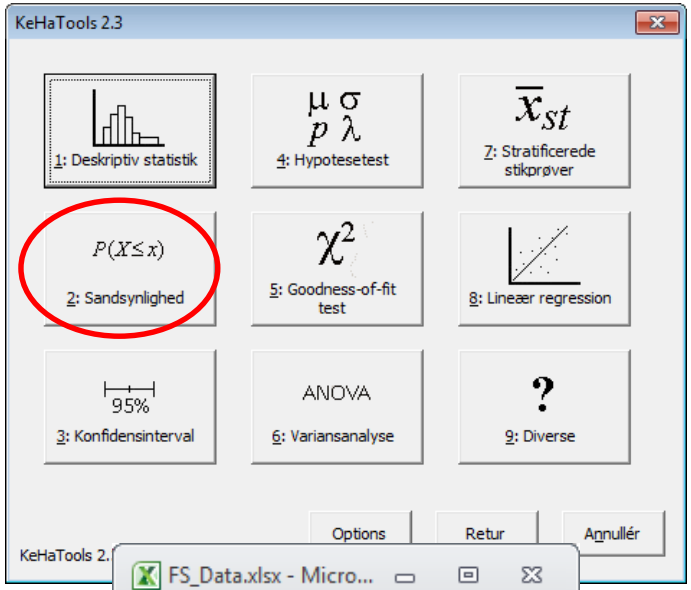
	A	B	C	D	E
1	**Beregninger i Poisson-fordelingen**				
2					
3		Intensitet	0,1		
4					
5		Middelvæ	0,1		
6		Varians	0,1		
7		Standarda	0,316228		
8					
9					
10	**Tabel over sandsynligheder**				
11					
12	k	P(X≤k)	P(X=k)	P(X≥k)	
13	0	0,904837	0,904837	1	
14	1	0,995321	0,090484	0,095163	
15	2	0,999845	0,004524	0,004679	
16	3	0,999996	0,000151	0,000155	
17	4	1	3,77E-06	3,85E-06	
18	5	1	7,54E-08	7,67E-08	
19	6	1	1,26E-09	1,27E-09	
20	7	1	1,8E-11	1,82E-11	
21	8	1	2,24E-13	2,27E-13	
22	9	1	2,49E-15	2,44E-15	

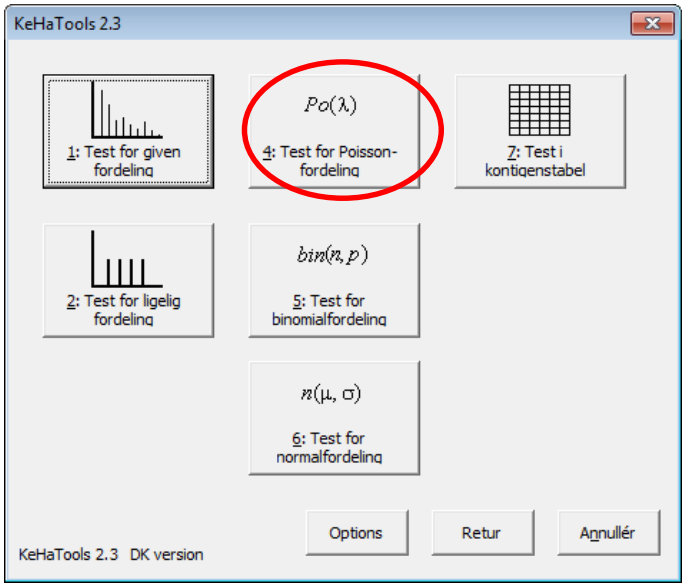
Eksempel 9.8 - III

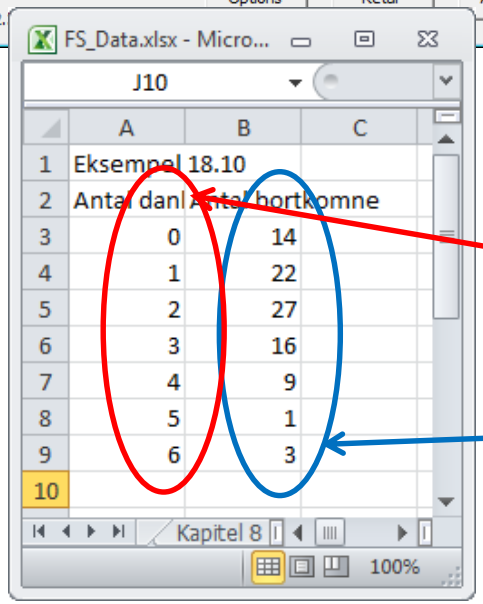
- For *Y*s vedkommende er intensiteten 6
- Ved så høje intensiteter bør man ændre på start- og slutværdi, så man kan se de relevante sandsynligheder

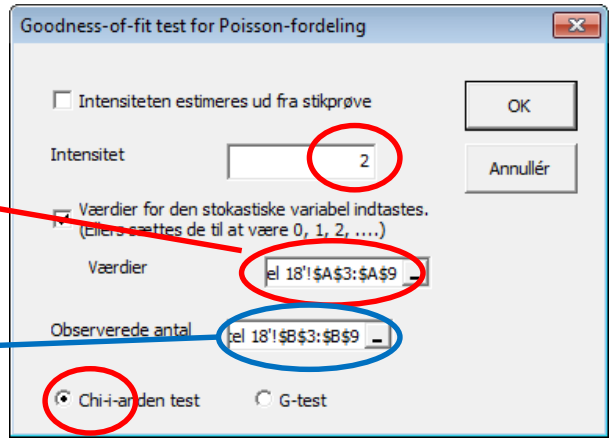


Eksempel 9.10 - I

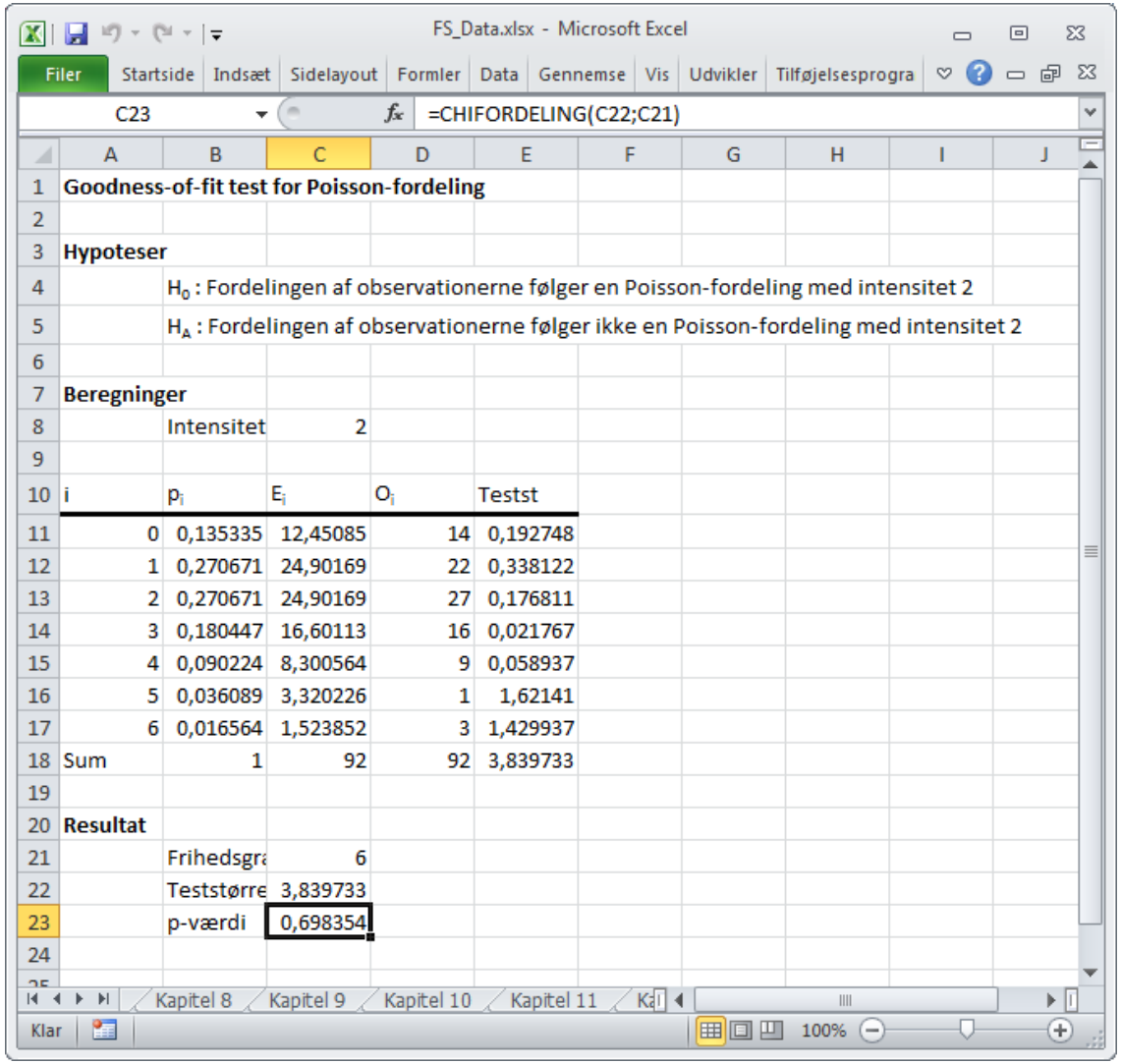








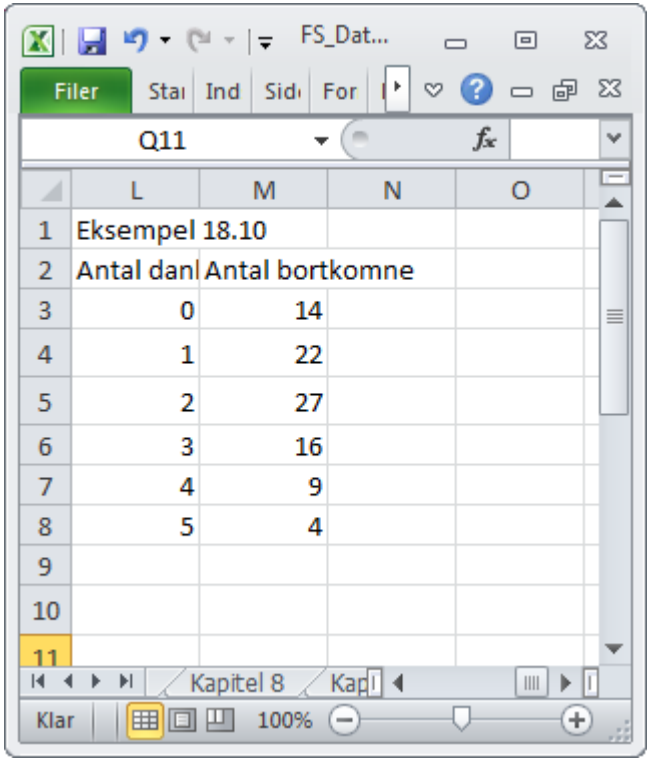
Eksempel 9.10 - II

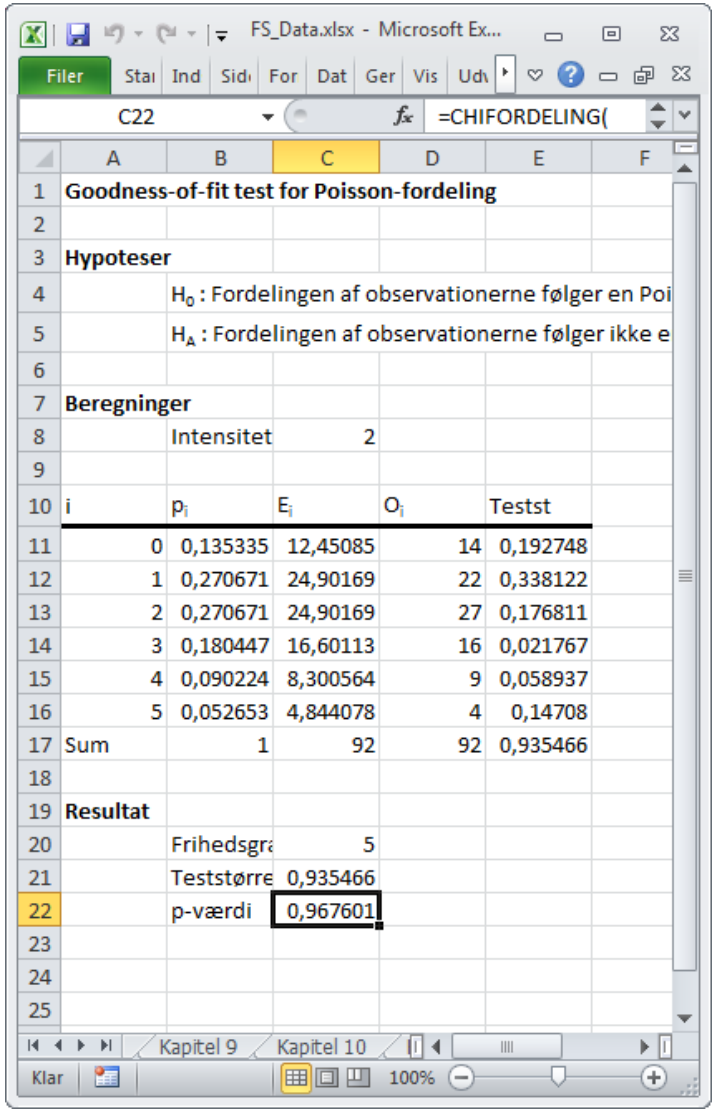


	A	B	C	D	E
1	**Goodness-of-fit test for Poisson-fordeling**				
2					
3	**Hypoteser**				
4		H_0 : Fordelingen af observationerne følger en Poisson-fordeling med intensitet 2			
5		H_A : Fordelingen af observationerne følger ikke en Poisson-fordeling med intensitet 2			
6					
7	**Beregninger**				
8		Intensitet	2		
9					
10	i	p_i	E_i	O_i	Teststørrelse
11	0	0,135335	12,45085	14	0,192748
12	1	0,270671	24,90169	22	0,338122
13	2	0,270671	24,90169	27	0,176811
14	3	0,180447	16,60113	16	0,021767
15	4	0,090224	8,300564	9	0,058937
16	5	0,036089	3,320226	1	1,62141
17	6	0,016564	1,523852	3	1,429937
18	Sum	1	92	92	3,839733
19					
20	**Resultat**				
21		Frihedsgrad	6		
22		Teststørrelse	3,839733		
23		p-værdi	0,698354		
24					

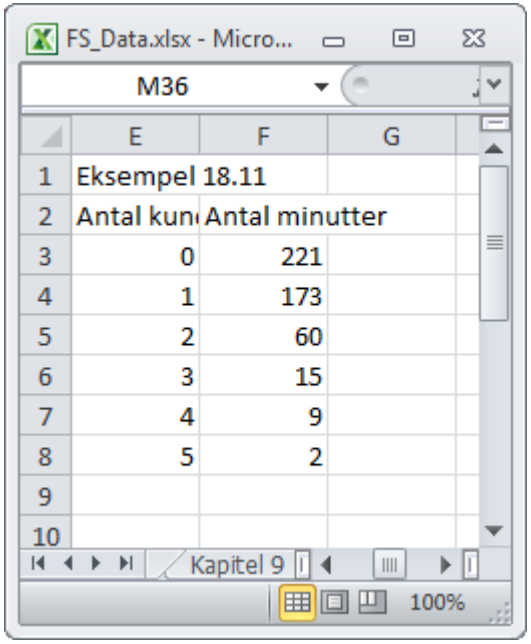
Eksempel 9.10 - III

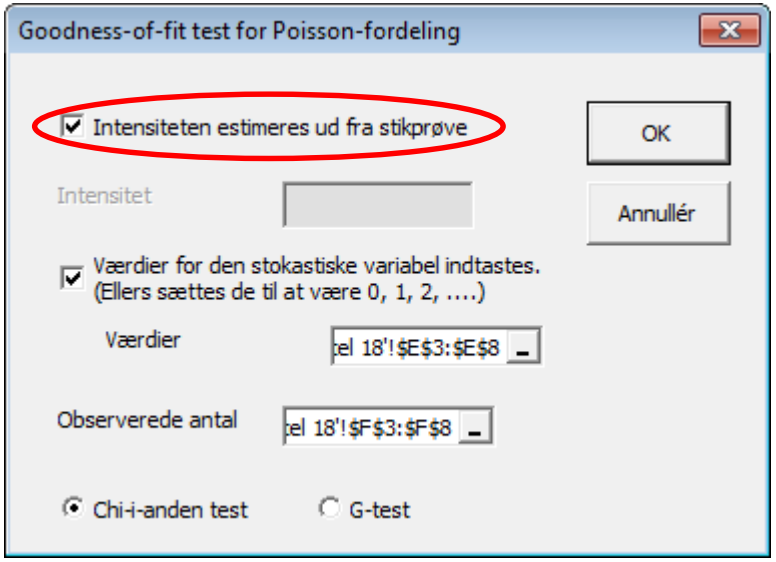
- Man må prøve igen:



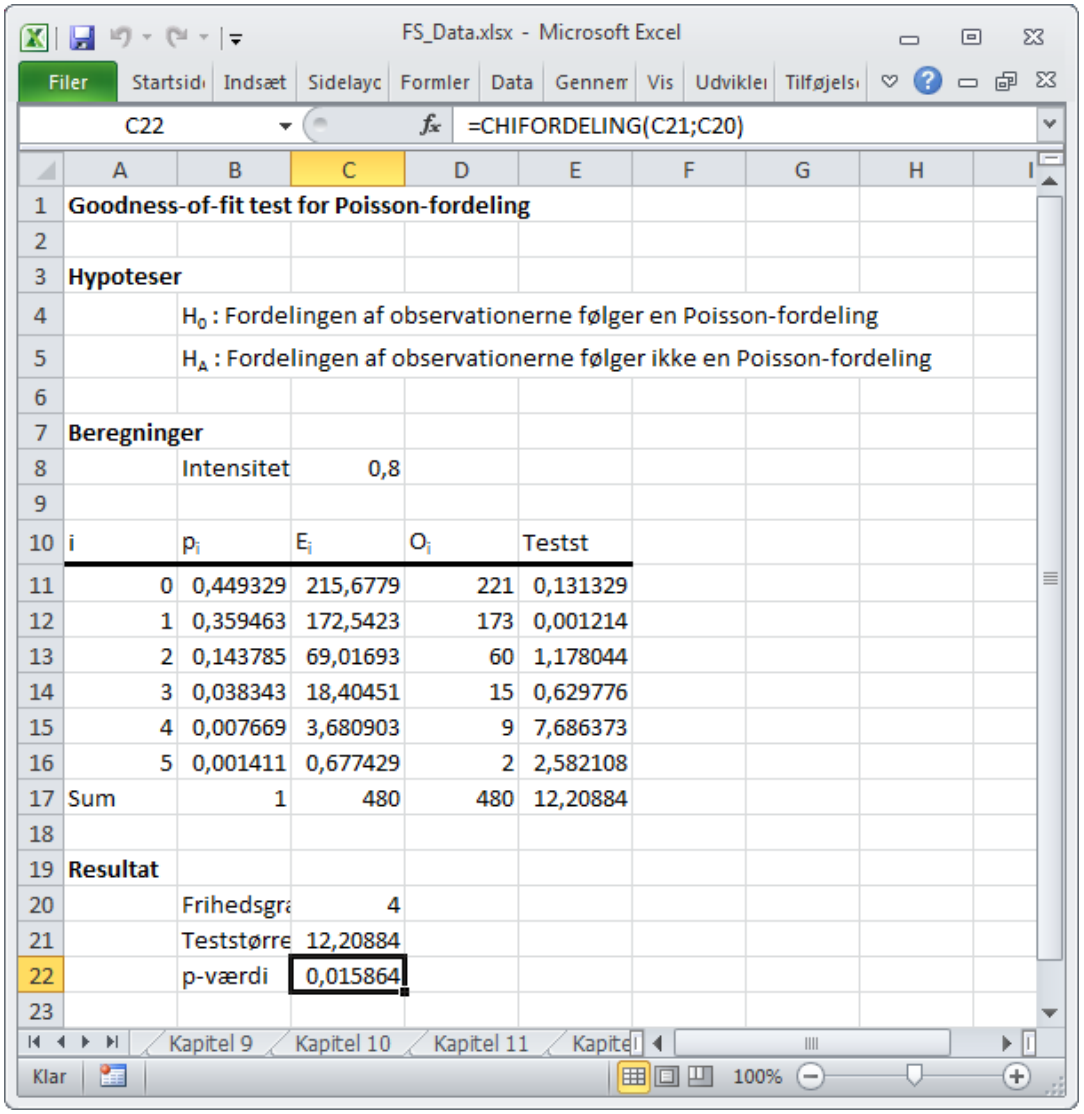


Eksempel 9.11 - I





Eksempel 9.11 - II



	A	B	C	D	E
1	**Goodness-of-fit test for Poisson-fordeling**				
2					
3	**Hypoteser**				
4		H_0 : Fordelingen af observationerne følger en Poisson-fordeling			
5		H_A : Fordelingen af observationerne følger ikke en Poisson-fordeling			
6					
7	**Beregninger**				
8		Intensitet	0,8		
9					
10	i	p_i	E_i	O_i	Teststørrelse
11	0	0,449329	215,6779	221	0,131329
12	1	0,359463	172,5423	173	0,001214
13	2	0,143785	69,01693	60	1,178044
14	3	0,038343	18,40451	15	0,629776
15	4	0,007669	3,680903	9	7,686373
16	5	0,001411	0,677429	2	2,582108
17	Sum	1	480	480	12,20884
18					
19	**Resultat**				
20		Frihedsgrad	4		
21		Teststørrelse	12,20884		
22		p-værdi	0,015864		
23					

Eksempel 9.12 - I