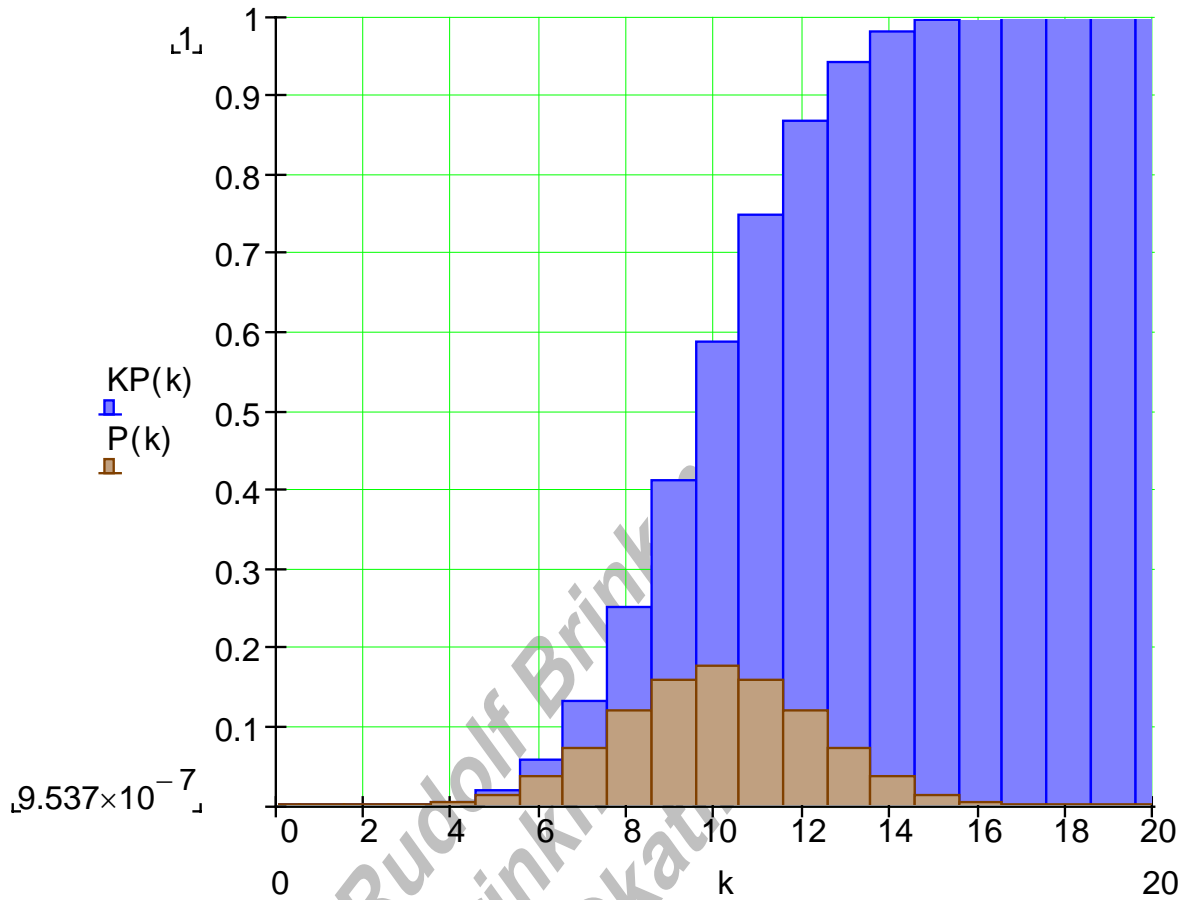
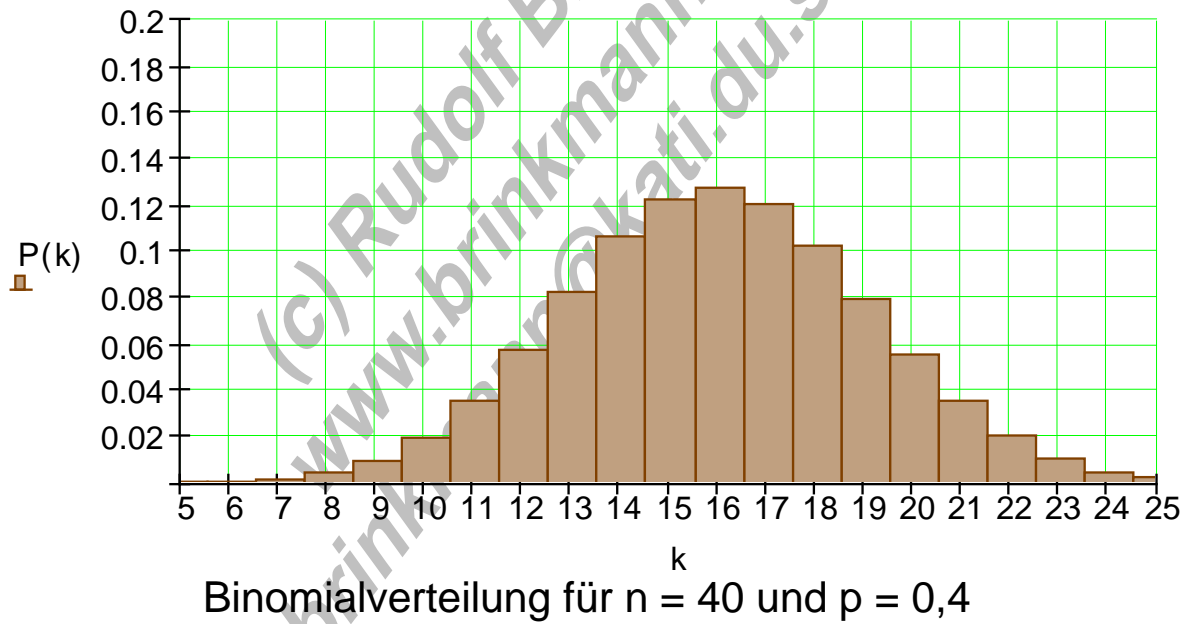
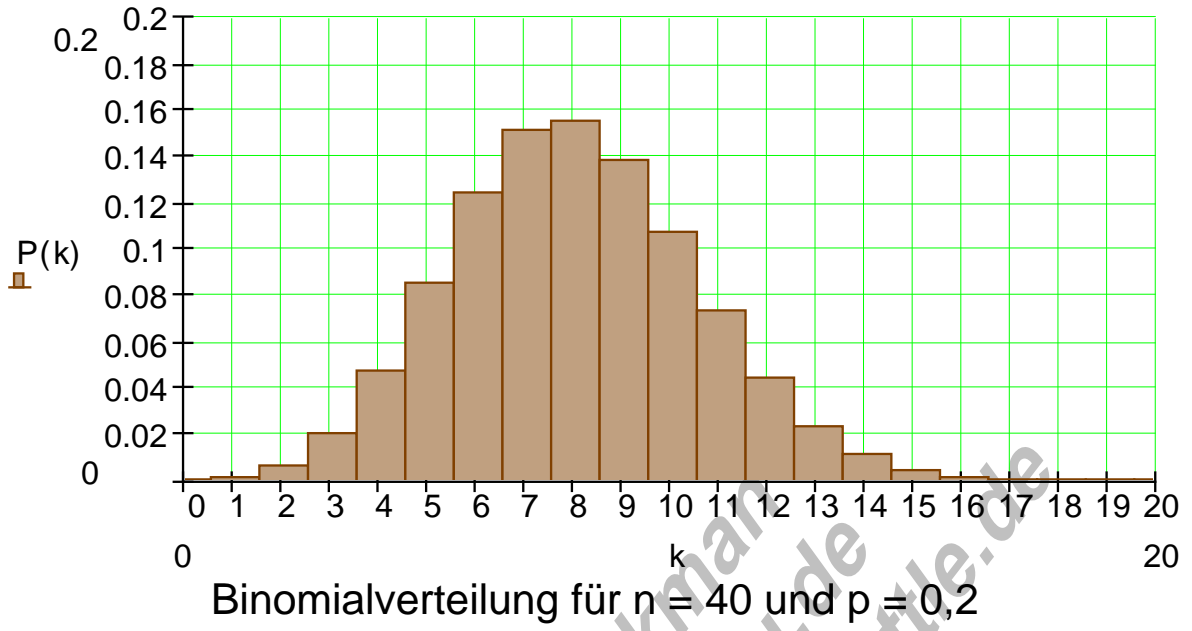
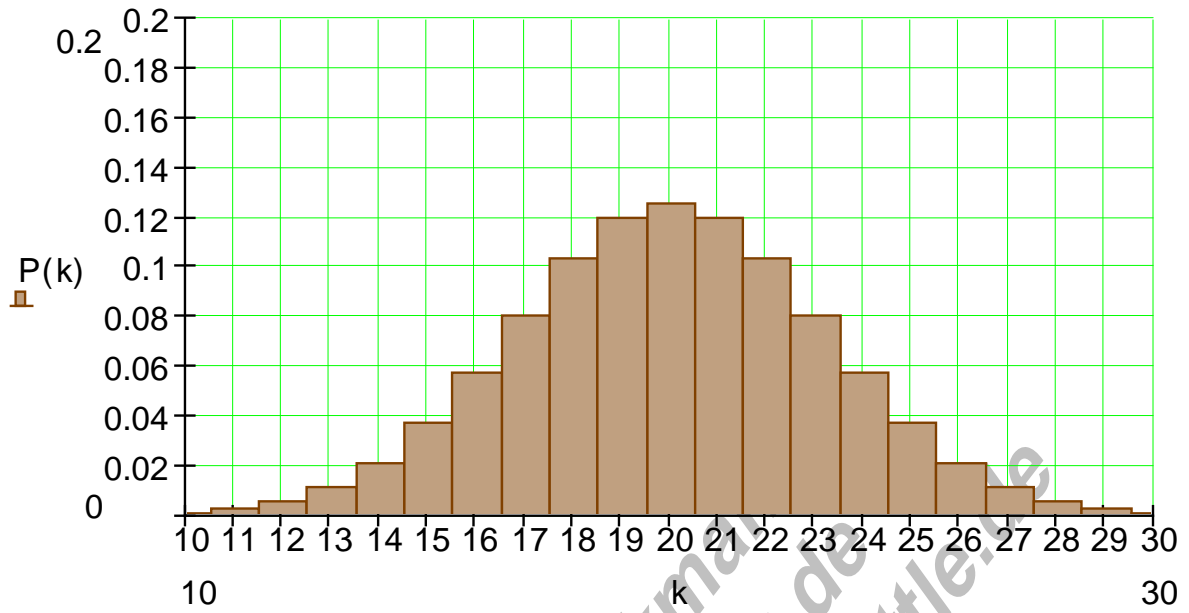


# Histogramm der kumulierten Binomialverteilung

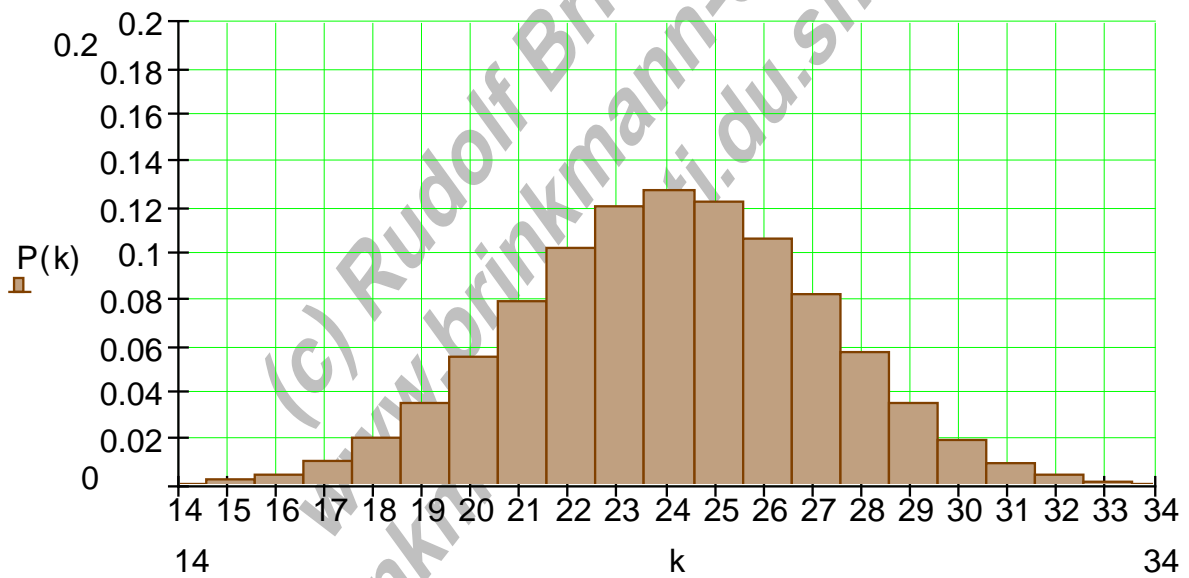


$P(X = k) = \binom{n}{k} \cdot p^k \cdot (1-p)^{n-k}$		
$P(X \leq k) = \sum_{k=0}^k \binom{n}{k} \cdot p^k \cdot (1-p)^{n-k}$		
$P(X \geq k) = \sum_{k=k}^n \binom{n}{k} \cdot p^k \cdot (1-p)^{n-k}$		
$P(a \leq k \leq b) = \sum_{k=a}^b \binom{n}{k} \cdot p^k \cdot (1-p)^{n-k}$		

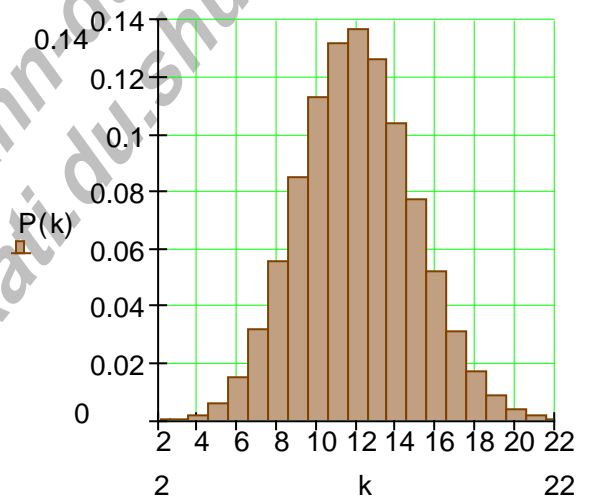
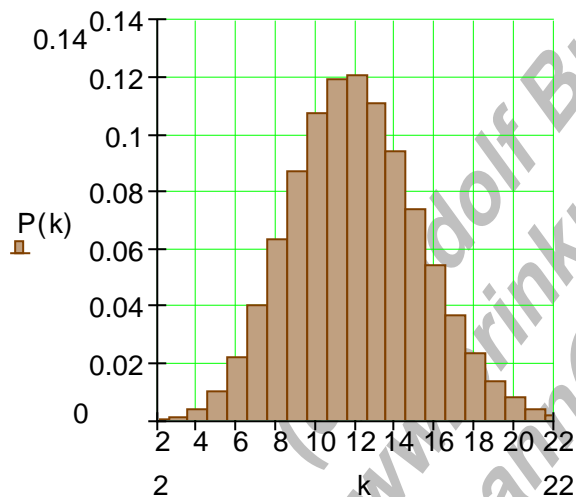
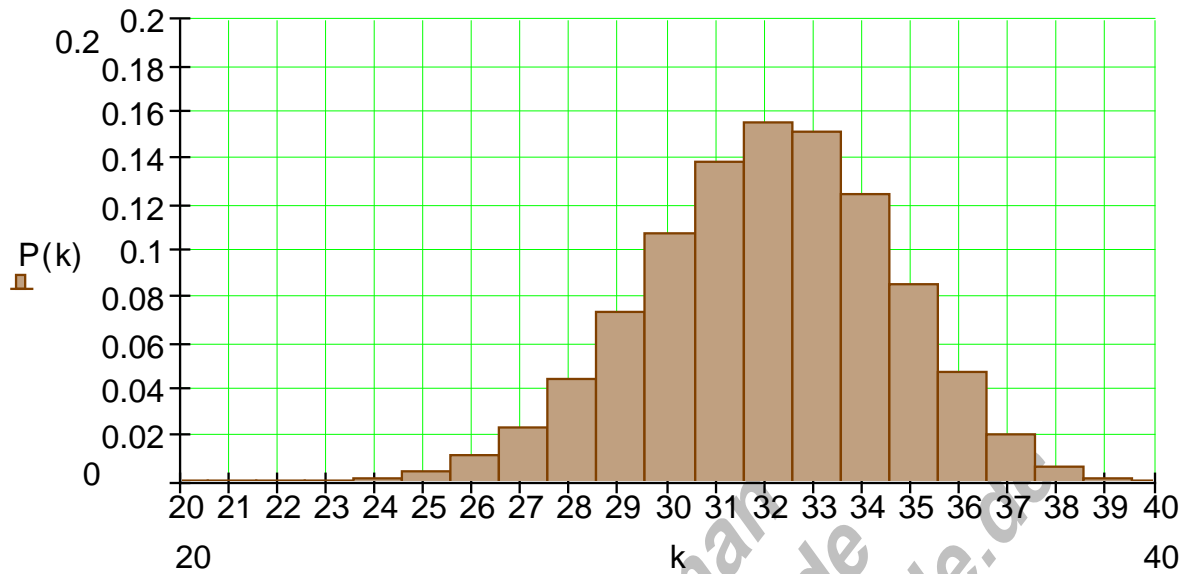




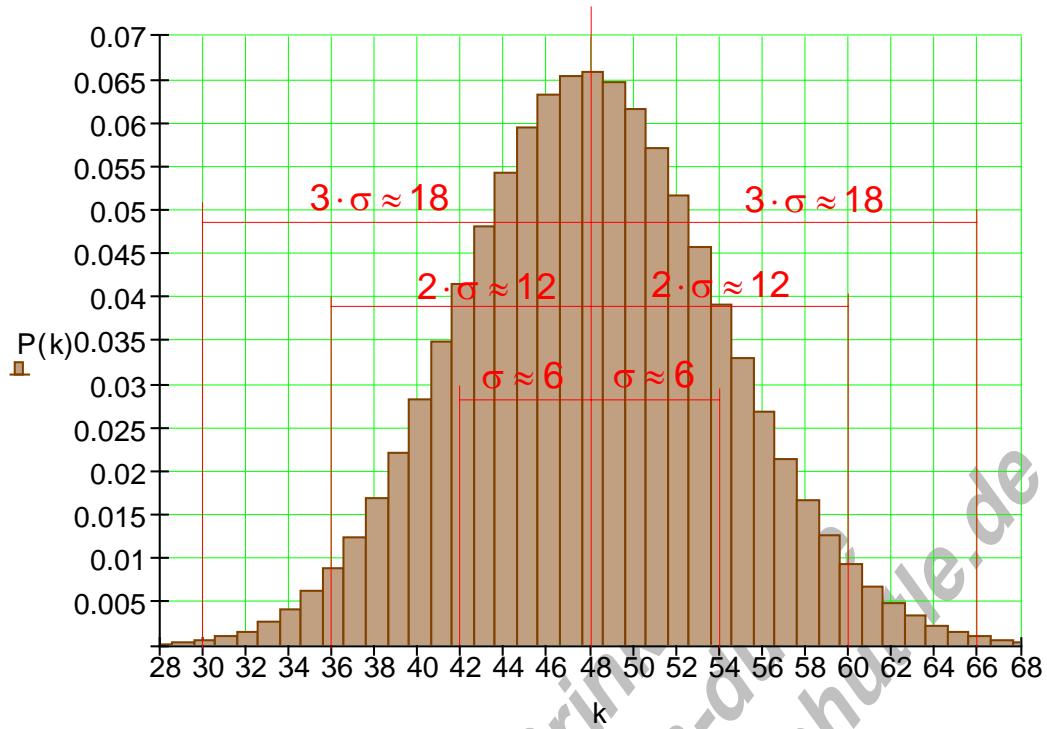
Binomialverteilung für  $n = 40$  und  $p = 0,5$



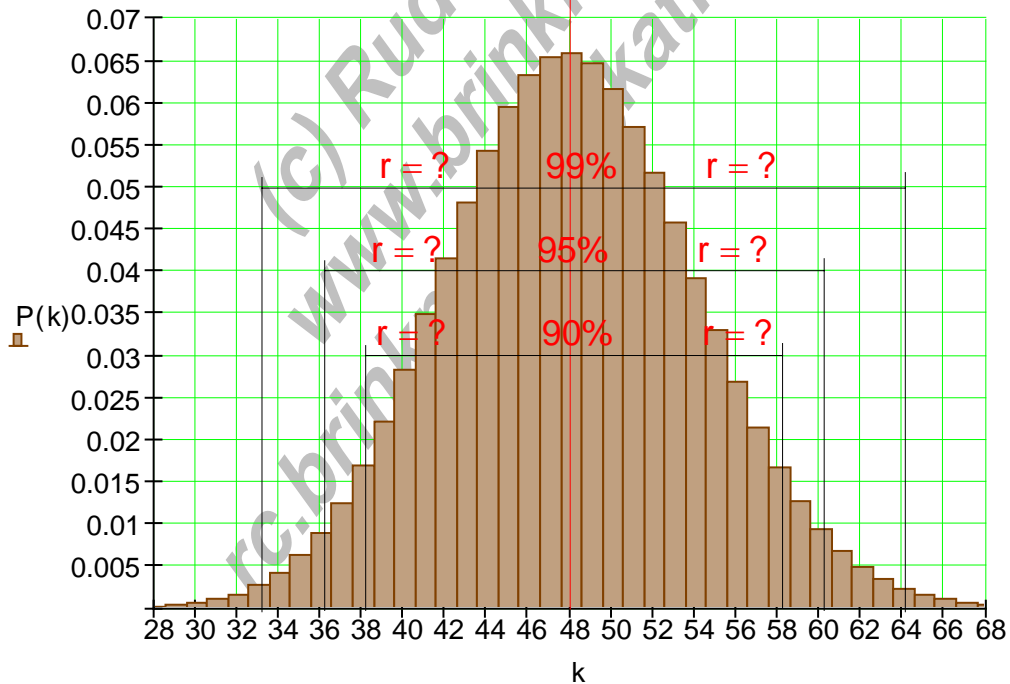
Binomialverteilung für  $n = 40$  und  $p = 0,6$



Beide Binomialverteilungen haben den gleichen Erwartungswert;  
 $\mu = n \cdot p = 120 \cdot 0,1 = \underline{\underline{12}}$ 
 $\mu = n \cdot p = 40 \cdot 0,3 = \underline{\underline{12}}$

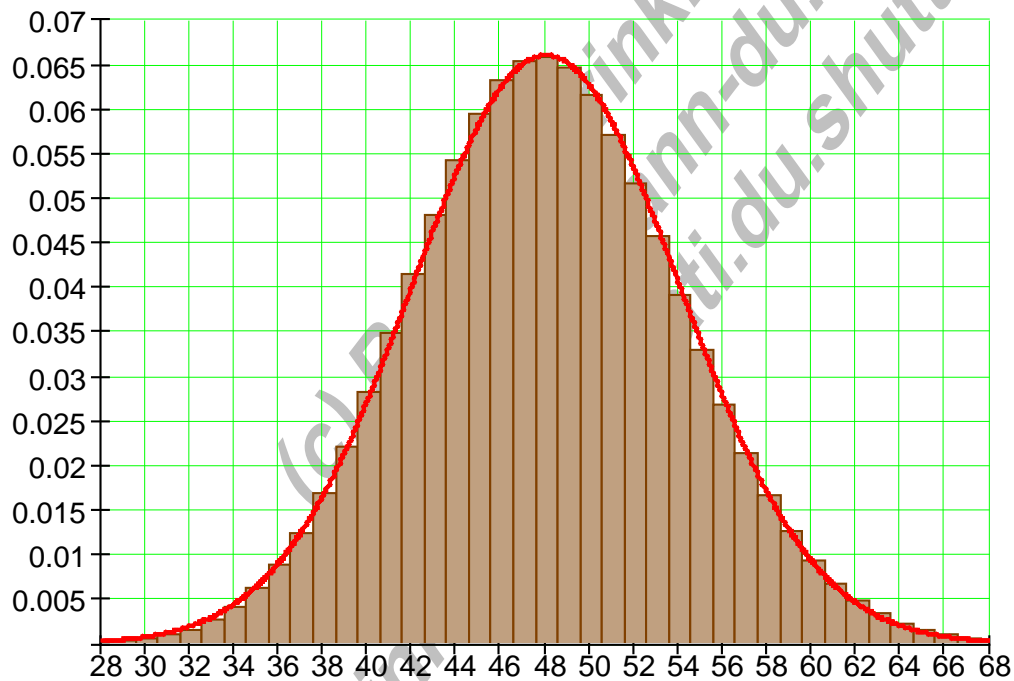


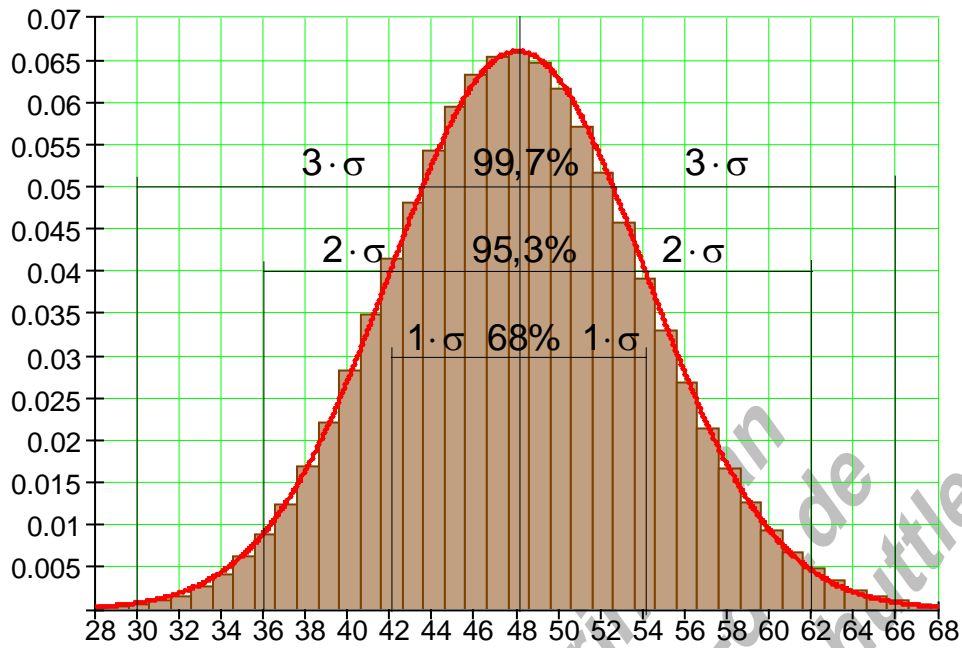
### Sigma- Umgebungen



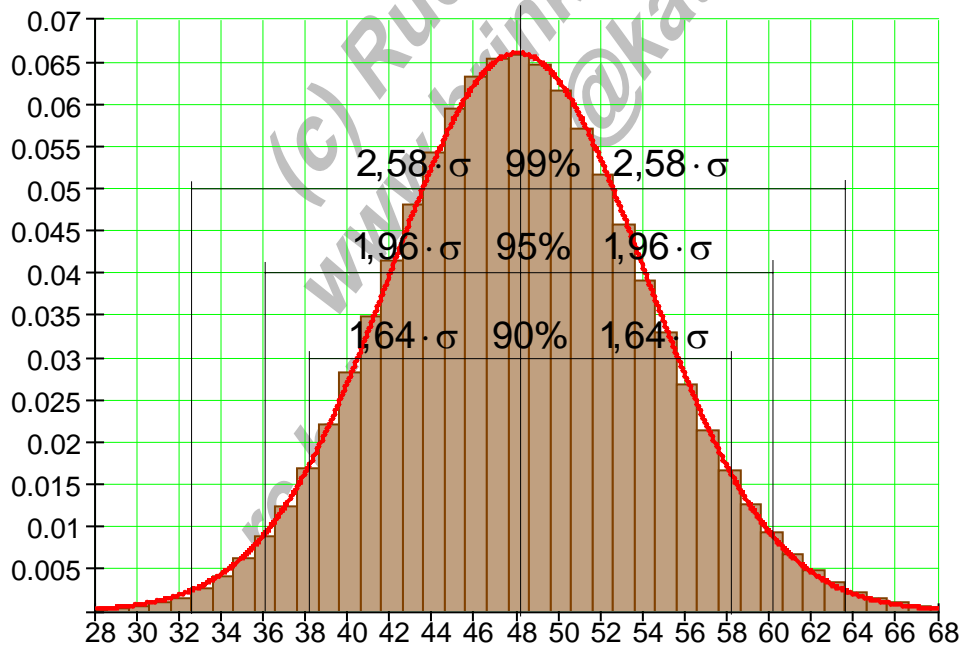
### Prozent- Umgebung

k	28	29	30	31	32	33	34	35
$P(X \leq k)$	0,000	0,001	0,001	0,002	0,004	0,007	0,011	0,017
k	36	37	38	39	40	41	42	43
$P(X \leq k)$	0,026	0,038	0,055	0,077	0,106	0,140	0,182	0,230
k	44	45	46	47	48	49	50	51
$P(X \leq k)$	0,284	0,344	0,407	0,473	0,539	0,603	0,665	0,722
k	52	53	54	55	56	57	58	59
$P(X \leq k)$	0,774	0,819	0,859	0,892	0,918	0,940	0,957	0,969
k	60	61	62	63	64	65	66	67
$P(X \leq k)$	0,979	0,986	0,990	0,994	0,996	0,998	0,998	0,999





Sigma- Umgebungen



Prozent- Umgebungen in Einheiten von Sigma