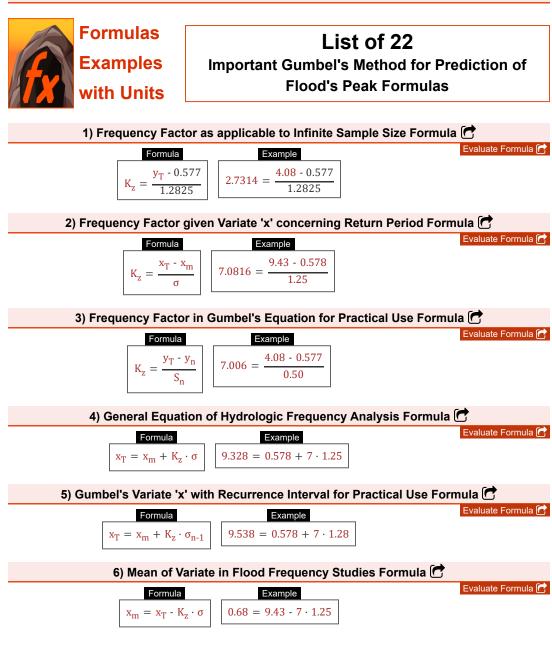
# Important Gumbel's Method for Prediction of Flood's Peak Formulas PDF



7) Mean Variate given Variate 'x' with Recurrence Interval for Practical Use Formula 🕝 👘

Evaluate Formula 🦳

Evaluate Formula

Evaluate Formula 🦳

Formula	Example
$\mathbf{x}_{m} = \mathbf{x}_{T} \cdot \left( \mathbf{K}_{z} \cdot \boldsymbol{\sigma}_{n-1} \right)$	$0.47 = 9.43 - (7 \cdot 1.28)$

#### 8) Reduced Mean when Frequency Factor and Standard Deviation are Considered Formula 🕝

Formula	Example
$\mathbf{y}_{n} = \mathbf{y}_{T} \cdot \left( \mathbf{K}_{z} \cdot \mathbf{S}_{n} \right)$	$0.58 = 4.08 - (7 \cdot 0.50)$

#### 9) Reduced Standard Deviation when Variate and Reduced Mean is Considered Formula 🕝

Formula	Example
$S_n = \frac{y_T - y_n}{K_z}$	$0.5004 = \frac{4.08 - 0.577}{7}$

10) Reduced Variate concerning Return Period Formula 🕝		
Formula	Example	Evaluate Formula 🕝
$\mathbf{y}_{\mathrm{T}} = -\left( \ln \left( \ln \left( \frac{\mathbf{T}_{\mathrm{r}}}{\mathbf{T}_{\mathrm{r}} \cdot 1} \right) \right) \right)$	$5.0073 = -\left(\ln\left(\ln\left(\frac{150}{150 - 1}\right)\right)\right)$	

#### 11) Reduced Variate for Return Period when Frequency Factor is Considered Formula

Formula	Example	Evaluate Formula
$\mathbf{y_{tf}} = \left( \mathbf{K_z} \cdot 1.2825 \right) + 0.577$	$9.5545 = (7 \cdot 1.2825) + 0.577$	

## 12) Reduced Variate when Frequency Factor and Standard Deviation is Considered Formula

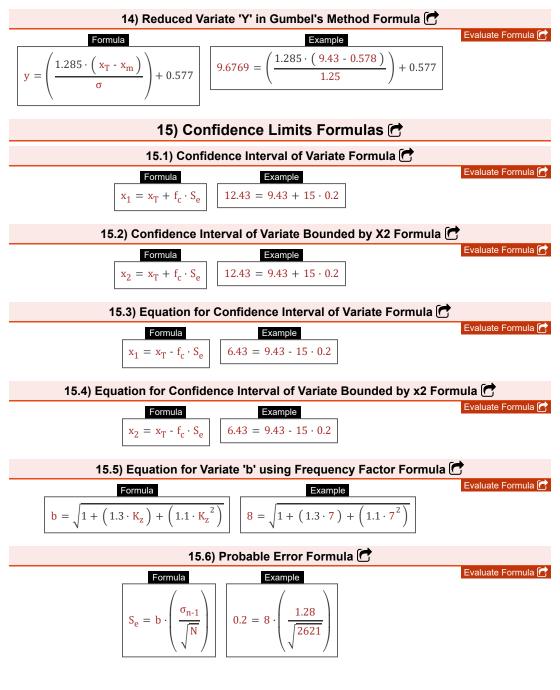
	Formula	Example	Evaluate Formula 🔂
	$y_{tf} = K_z \cdot \sigma_{n-1} + y_n$	9.537 = 7 · 1.28 + 0.577	

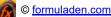
### 13) Reduced Variate 'Y' for given Return Period Formula 🕝

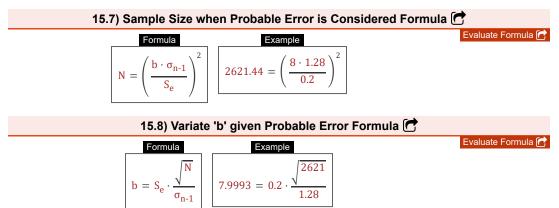
Formula  $y_{T} = -\left(0.834 + 2.303 \cdot \log 10 \left(\log 10 \left(\frac{T_{r}}{T_{r} - 1}\right)\right)\right)$ Example

$$5.0084 = -\left(0.834 + 2.303 \cdot \log 10 \left(\log 10 \left(\frac{150}{150 - 1}\right)\right)\right)$$









# Variables used in list of Gumbel's Method for Prediction of Flood's Peak Formulas above

- **b** Variable 'b' in Probable Error
- f<sub>c</sub> Function of Confidence Probability
- Kz Frequency Factor
- N Sample Size
- Se Probable Error
- Sn Reduced Standard Deviation
- Tr Return Period
- X1 Value of 'x1' Bounded to Variate 'Xt'
- X2 Value of 'x2' Bounded to Variate 'Xt'
- Xm Mean of the Variate X
- X<sub>T</sub> Variate 'X' with a Recurrence Interval
- y Reduced Variate 'Y'
- yn Reduced Mean
- **y<sub>T</sub>** Reduced Variate 'Y' for Return Period
- y<sub>tf</sub> Reduced Variate 'Y' with Respect to Frequency
- $\sigma$  Standard Deviation of the Z Variate Sample
- +  $\sigma_{n-1}$  Standard Deviation of the Sample of Size N

# Constants, Functions, Measurements used in list of Gumbel's Method for Prediction of Flood's Peak Formulas above

- Functions: In, In(Number) The natural logarithm, also known as the logarithm to the base e, is the inverse function of the natural exponential function.
- Functions: log10, log10(Number) The common logarithm, also known as the base-10 logarithm or the decimal logarithm, is a mathematical function that is the inverse of the exponential function.
- Functions: sqrt, sqrt(Number) A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.

- Important Empirical Formulae for Flood-Peak Area Relationships Formulas
- Important Gumbel's Method for Prediction of Flood's Peak Formulas C
- Important Rational Method to Estimate the Flood Peak Formulas (
- Important Risk, Reliability and Log-Pearson Distribution Formulas

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