



Flood Discharge Formulae Formulas

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List of 22 Flood Discharge Formulae Formulas

Flood Discharge Formulae 🗗

Creager's Formula 🗗

1) Constant used in FPS Unit when Flood Discharge by Creager's Formula

$$m C_c = rac{Q_c}{46\cdot (A_1)^{0.894\cdot A_1^{-0.084}}}$$

$$oxed{egin{aligned} egin{aligned} egin{aligned} egin{aligned} 4.2 ext{E}6ft^3/s \ 46\cdot(2.6 ext{mi}^2)^{0.894\cdot(2.6 ext{mi}^2)^{-0.084} \end{aligned} \end{aligned}}$$

2) Flood Discharge by Creager

$$\mathbf{R} \left[\mathrm{Q_c} = 46 \cdot \mathrm{C_c} \cdot (\mathrm{A_1})^{0.894 \cdot \mathrm{A_1^{-0.084}}}
ight]$$



Dicken's Formula 🗗

3) Area of Basin given Flood Discharge by Dicken's Formula

$$\mathbf{A}_{\mathrm{km}} = \left(rac{\mathrm{Q}_{\mathrm{D}}}{\mathrm{C}_{\mathrm{D}}}
ight)^{rac{4}{3}}$$

$$oxed{ex} 2.4 \mathrm{km^2} = \left(rac{695125.6 \mathrm{m^3/s}}{11.4}
ight)^{rac{4}{3}}$$





4) Constant used in Flood Discharge by Dicken's Formula

 $\mathbf{C}_{\mathrm{D}} = \left(rac{\mathrm{Q}_{\mathrm{D}}}{\left(\mathrm{A}_{\mathrm{km}}
ight)^{rac{3}{4}}}
ight)$

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5) Flood Discharge by Dicken's Formula

 $\mathbf{K} \mathbf{Q}_{\mathrm{D}} = \mathrm{C}_{\mathrm{D}} \cdot \left(\mathrm{A}_{\mathrm{km}}
ight)^{rac{3}{4}}$

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$$ext{ex} \ 695125.6 ext{m}^3/ ext{s} = 11.4 \cdot (2.4 ext{km}^2)^{rac{3}{4}}$$

6) Flood Discharge by Dicken's Formula for Northern India

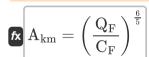
 $m Q_D = 11.4 \cdot (A_{km})^{rac{3}{4}}$

Open Calculator

$$ext{ex} 695125.6 ext{m}^3/ ext{s} = 11.4 \cdot (2.4 ext{km}^2)^{rac{3}{4}}$$

Fannning's Formula 🗗

7) Catchment Area given Flood Discharge by Fanning's Formula



$$oxed{ex} 2.4 {
m km^2} = \left(rac{526837.2 {
m m^3/s}}{2.54}
ight)^{rac{6}{5}}$$



8) Constant used in Flood Discharge by Fanning's Formula

 $\mathrm{C_F} = \left(rac{\mathrm{Q_F}}{\mathrm{(A_{km})^{rac{5}{6}}}}
ight)$

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$$oxed{ex} 2.54 = \left(rac{526837.2 ext{m}^3/ ext{s}}{(2.4 ext{km}^2)^{rac{5}{6}}}
ight)$$

9) Flood Discharge by Fanning's Formula

fx $ig|_{ ext{Q}_{ ext{F}} = ext{C}_{ ext{F}} \cdot (ext{A}_{ ext{km}})^{rac{5}{6}}$

Open Calculator 2

Open Calculator 🚰

 $526837.2 \text{m}^3/\text{s} = 2.54 \cdot (2.4 \text{km}^2)^{\frac{5}{6}}$

Fuller's Formula 🛂

10) Constant used in Flood Discharge by Fuller's Formula

$$\mathrm{C_{FL}} = \left(rac{\mathrm{Q_{FL}}}{\left(\left(\mathrm{A_{km}}
ight)^{0.8}
ight)\cdot\left(1+0.8\cdot\log(\mathrm{T_m},e)
ight)\cdot\left(1+2.67\cdot\left(\mathrm{A_{km}}
ight)^{-0.3}
ight)}
ight)$$

$$\boxed{ 0.185 = \left(\frac{25355.77 \text{m}^3/\text{s}}{\left(\left(2.4 \text{km}^2 \right)^{0.8} \right) \cdot \left(1 + 0.8 \cdot \log(2.2 \text{Year}, e) \right) \cdot \left(1 + 2.67 \cdot \left(2.4 \text{km}^2 \right)^{-0.3} \right) } \right) }$$



11) Constant used in FPS Unit given Flood Discharge by Fuller's Formula

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Open Calculator

Open Calculator 🚰

$$ext{C}_{ ext{FLF}} = \left(rac{ ext{Q}_{ ext{FLF}}}{\left((ext{A}_1)^{0.8}
ight) \cdot (1 + 0.8 \cdot \log(ext{T}_{ ext{m}}, e)) \cdot \left(1 + 2 \cdot (ext{A}_1)^{-0.2}
ight)}
ight)$$

12) Flood Discharge by Fuller's Formula C

$$\mathrm{Q_{FL}} = \mathrm{C_{FL}} \cdot \left(\left(\mathrm{A_{km}}
ight)^{0.8}
ight) \cdot \left(1 + 0.8 \cdot \log(\mathrm{T_m}, e)
ight) \cdot \left(1 + 2.67 \cdot \left(\mathrm{A_{km}}
ight)^{-0.3}
ight)$$

ex

$$\left[25355.77 ext{m}^3/ ext{s} = 0.185 \cdot \left(\left(2.4 ext{km}^2
ight)^{0.8}
ight) \cdot \left(1 + 0.8 \cdot \log(2.2 ext{Year}, e)
ight) \cdot \left(1 + 2.67 \cdot \left(2.4 ext{km}^2
ight)^{-0.3}
ight)
ight]$$

13) Flood Discharge in FPS Unit by Fuller's Formula 🗗

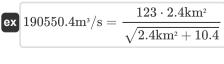
 $\mathrm{Q_{FLF}} = \mathrm{C_{FLF}} \cdot \left(\left(\mathrm{A_1} \right)^{0.8} \right) \cdot \left(1 + 0.8 \cdot \log(\mathrm{T_m}, e) \right) \cdot \left(1 + 2 \cdot \left(\mathrm{A_1} \right)^{-0.2} \right)$

Inglis Formula 🚰

14) Flood Discharge by Inglis Formula 🔽

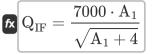
fx
$$m Q_I = rac{123 \cdot A_{km}}{\sqrt{A_{km} + 10.4}}$$

$$\frac{23 \cdot 2.4 \text{km}^2}{2.4 \text{km}^2 + 10.4}$$





15) Flood Discharge in FPS Unit by Inglis Formula



Open Calculator 🗗

$$\boxed{ 7084.317 ft^3/s = \frac{7000 \cdot 2.6 mi^2}{\sqrt{2.6 mi^2 + 4}} }$$

Nawab Jang Bahadur Formula 🗗

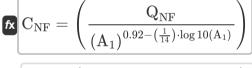
16) Constant used in Flood Discharge by Nawab Jang Bahadur Formula 🛂

$$m C_N = rac{Q_N}{\left(A_{km}
ight)^{0.993-\left(rac{1}{14}
ight)\cdot \log 10(A_{km})}}$$

Open Calculator

$$=$$
 $48 = rac{128570.5 ext{m}^3/ ext{s}}{(2.4 ext{km}^2)^{0.993 - \left(rac{1}{14}
ight) \cdot \log 10(2.4 ext{km}^2)}}$

17) Constant used in FPS Unit given Flood Discharge by Nawab Jang Bahadur Formula Open Calcul



Open Calculator 🗗

$\boxed{ 1600 = \left(\frac{3746.224 \mathrm{ft^3/s}}{(2.6 \mathrm{mi^2})^{0.92 - \left(\frac{1}{14}\right) \cdot \log 10(2.6 \mathrm{mi^2})}} \right) }$

- 0.002 (1) log10(A)

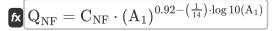
$$Q_{
m N}=C_{
m N}\cdot(A_{
m km})^{0.993-\left(rac{1}{14}
ight)\cdot\log10(A_{
m km})}$$

Open Calculator 🗗

ex
$$128570.5 \mathrm{m}^{\scriptscriptstyle 3}/\mathrm{s} = 48\cdot (2.4 \mathrm{km}^{\scriptscriptstyle 2})^{0.993 - (\frac{1}{14})\cdot \log 10(2.4 \mathrm{km}^{\scriptscriptstyle 2})}$$

18) Flood Discharge by Nawab Jang Bahadur Formula 🗗

19) Flood Discharge in FPS Unit by Nawab Jang Bahadur Formula



Open Calculator

$$\sim 3746.224 {
m ft}^3/{
m s} = 1600 \cdot (2.6 {
m mi}^2)^{0.92 - \left(rac{1}{14}
ight) \cdot \log 10 (2.6 {
m mi}^2)}$$







Ryve's Formula 🗗

20) Catchment Area for Flood Discharge by Ryve's Formula

 $\mathbf{A}_{\mathrm{km}} = \left(rac{\mathrm{Q}_{\mathrm{R}}}{\mathrm{C}_{\mathrm{R}}}
ight)^{rac{3}{2}}$

Open Calculator

ex $2.399999 ext{km}^2 = \left(rac{120997.9 ext{m}^3/ ext{s}}{6.75}
ight)^{rac{3}{2}}$

21) Constant used in Flood Discharge by Ryve's Formula

 $\mathrm{C_R} = \left(rac{\mathrm{Q_R}}{\left(\mathrm{A_{km}}
ight)^{rac{2}{3}}}
ight)$

Open Calculator 🗗

 $= \left(\frac{120997.9 \text{m}^3/\text{s}}{(2.4 \text{km}^2)^{\frac{2}{3}}} \right)$

22) Flood Discharge by Ryve's Formula 🗗

 $\left[\mathbf{Q}_{\mathrm{R}} = \mathrm{C}_{\mathrm{R}} \cdot \left(\mathrm{A}_{\mathrm{km}}
ight)^{rac{2}{3}}
ight]$

Open Calculator 🗗

 $ext{ex} \ 120997.9 ext{m}^3/ ext{s} = 6.75 \cdot (2.4 ext{km}^2)^{rac{2}{3}}$



Variables Used

- A₁ Area of Basin (Square Mile)
- A_{km} Catchment Area for Flood Discharge (Square Kilometer)
- Cc Creager Constant
- C_D Dicken's Constant
- C_F Fanning's Constant
- C_{FI} Fuller's Constant
- CFLF Fuller's Constant for FPS
- C_N Nawab Jang Bahadur Constant
- C_{NF} Nawab Jang Bahadur Constant for FPS
- C_R Ryve's Constant
- Q_c Flood Discharge by Creager's Formula (Cubic Foot per Second)
- **Q**_D Flood Discharge by Dicken's Formula (Cubic Meter per Second)
- Q_F Flood Discharge by Fanning's Formula (Cubic Meter per Second)
- Q_{FL} Flood Discharge by Fuller's Formula (Cubic Meter per Second)
- QFI F Flood Discharge by Fuller's Formula in FPS (Cubic Foot per Second)
- QI Flood Discharge by Inglish Formula (Cubic Meter per Second)
- Q_{IF} Flood Discharge by Inglish Formula in FPS (Cubic Foot per Second)
- Q_N Flood Discharge by Nawab Jung Bahadur's Formula (Cubic Meter per Second)
- Q_{NF} Flood Discharge by Nawab J Bahadur Formula for FPS (Cubic Foot per Second)
- Q_R Flood Discharge by Ryve's Formula (Cubic Meter per Second)
- T_m Time Period for a Flood Discharge (Year)





Constants, Functions, Measurements used

- Constant: e, 2.71828182845904523536028747135266249
 Napier's constant
- Function: log, log(Base, Number)

 Logarithmic function is an inverse function to exponentiation.
- Function: 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.
- Function: 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.
- Measurement: Time in Year (Year)
 Time Unit Conversion
- Measurement: Area in Square Mile (mi²), Square Kilometer (km²)
 Area Unit Conversion
- Measurement: Volumetric Flow Rate in Cubic Foot per Second (ft³/s), Cubic Meter per Second (m³/s)

Volumetric Flow Rate Unit Conversion





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