



# **Channel Flow Time and Time of Concentration Formulas**

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Examples!

Conversions!

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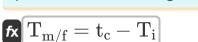




# List of 9 Channel Flow Time and Time of Concentration Formulas

# Channel Flow Time and Time of Concentration

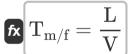
1) Channel Flow Time given Total Time of Concentration



Open Calculator

= 114.22 min - 94.78 min

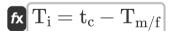
2) Channel Flow Time or Gutter Flow Time



Open Calculator 🗗

ex  $19.44444 \text{min} = \frac{3.5 \text{km}}{3 \text{m/s}}$ 

3) Inlet Time given Total Time of Concentration



Open Calculator

94.78 min = 114.22 min - 19.44 min



### 4) Inlet Time or Time of Equilibrium

( ) ( ) ( ) ( ) ( ) ( )

Open Calculator 🖸

$$T_{
m i} = \left(0.885 \cdot \left(rac{({
m L}_{
m ob})^3}{
m H}
ight)
ight)^{0.366}$$

$$94.61658 \text{min} = \left(0.885 \cdot \left(\frac{(4 \text{km})^3}{10.05 \text{m}}\right)\right)^{0.356}$$

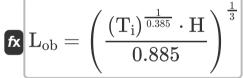
### 5) Length of Drain given Channel Flow Time

fx  $\mathrm{L}=\mathrm{T}_{\mathrm{m/f}}\cdot\mathrm{V}$ 

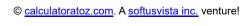


Open Calculator G

- $\boxed{\text{ex}} 3.4992 \text{km} = 19.44 \text{min} \cdot 3 \text{m/s}$
- 6) Length of Overland Flow given Inlet Time



$$ag{4.005981} ext{km} = \left(rac{(94.78 ext{min})^{rac{1}{0.385}} \cdot 10.05 ext{m}}{0.885}
ight)^{rac{1}{3}}$$



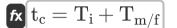
### 7) Total Fall of Level from Critical Point to Mouth of Drain given Inlet Time

fx  $H=rac{\left(L_{ob}
ight)^3}{\left(T_{i}
ight)^{rac{1}{0.385}}}$ 

Open Calculator 🚰

$$= \frac{(4\text{km})^3}{\frac{(94.78\text{min})^{\frac{1}{0.385}}}{0.885}}$$

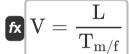
8) Total Time of Concentration



Open Calculator

$$= 114.22 min = 94.78 min + 19.44 min$$

9) Velocity in Drain given Channel Flow Time



Open Calculator

$$=$$
  $3.000686 \mathrm{m/s} = rac{3.5 \mathrm{km}}{19.44 \mathrm{min}}$ 



#### Variables Used

- **H** Fall of Level (Meter)
- L Length of Drain (Kilometer)
- Lob Length of Overland Flow (Kilometer)
- t<sub>c</sub> Time of Concentration (Minute)
- **T**<sub>i</sub> Inlet Time (Minute)
- T<sub>m/f</sub> Channel Flow Time (Minute)
- **V** Velocity in Drain (Meter per Second)





## Constants, Functions, Measurements used

- Measurement: Length in Kilometer (km), Meter (m)

  Length Unit Conversion
- Measurement: Time in Minute (min)

  Time Unit Conversion
- Measurement: Speed in Meter per Second (m/s)
   Speed Unit Conversion





#### Check other formula lists

- Channel Flow Time and Time of Peak Drainage Discharge Formula Concentration Formulas Formulas

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