



SCS Triangular Unit Hydrograph Formulas

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List of 13 SCS Triangular Unit Hydrograph Formulas

SCS Triangular Unit Hydrograph 🗗

1) Base Length in SCS Triangular Unit Hydrograph

., baco Longth in 500 Thangular Offic Hydrograph C

fx $T_{
m b} = 2.67 \cdot T_{
m p}$

 $18.69 m = 2.67 \cdot 7h$

2) Catchment Area given Peak Discharge

fx $A=T_p\cdot rac{Q_p}{2.08}$ $2.998558 km^2=7h\cdot rac{0.891 m^3/s}{2.08}$

3) Duration of Effective Rainfall for given Time of Peak

fx $t_{
m r} = 2 \cdot (T_{
m p} - 0.6 \cdot t_{
m c})$

 $2h = 2 \cdot (7h - 0.6 \cdot 10h)$

4) Duration of Effective Rainfall given Time of Peak

fx $t_{
m r} = 2 \cdot (T_{
m p} - t_{
m p})$



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5) Lag Time given Time of Peak



 $\left[\mathrm{t_p} = \mathrm{T_p} - rac{\mathrm{t_r}}{2}
ight]$

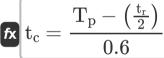
 $6h = 7h - \frac{2h}{2}$

6) Peak Discharge

 $oldsymbol{Q}_{
m p} = 2.08 \cdot rac{
m A}{
m T_{
m p}}$

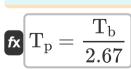
 $\mathbf{T_p}$ $\mathbf{T_p}$ \mathbf{ex} $0.891429 \mathrm{m}^3/\mathrm{s} = 2.08 \cdot rac{3.00 \mathrm{km}^2}{7 \mathrm{h}}$

7) Time of Concentration given Time of Peak



 $10h = \frac{7h - \left(\frac{2h}{2}\right)}{0.6}$

8) Time of Peak given Base Length



$$7h = \frac{18.69m}{2.67}$$







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9) Time of Peak given Peak Discharge 🛂

 $T_{
m p} = 2.08 \cdot rac{
m A}{
m Q_p}$

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 $ext{ex} 0.001945 ext{h} = 2.08 \cdot rac{3.00 ext{km}^2}{0.891 ext{m}^3/ ext{s}}$

10) Time of Peak given Time of Concentration

 $\left| \mathrm{T_p} = 0.6 \cdot \mathrm{t_c} + rac{\mathrm{t_r}}{2}
ight|$

 $| 7h = 0.6 \cdot 10h + \frac{2h}{2}$

11) Time of Peak given Time of Recession 🖸

 $ag{T_{
m p}} = rac{{
m Tc}}{1.67}$

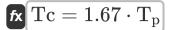
 $7.185629h = \frac{12h}{1.67}$

12) Time of Peak or Time of Rise

 $\left| \mathbf{T}_{\mathrm{p}} = \left(rac{\mathrm{t_{r}}}{2}
ight) + \mathrm{t_{p}}
ight|$



13) Time of Recession as Suggested in SCS 🗗



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 $\textbf{ex} \ 11.69 \text{h} = 1.67 \cdot 7 \text{h}$



Variables Used

- A Area of Catchment (Square Kilometer)
- Q_p Peak Discharge (Cubic Meter per Second)
- T_b Base Length (Meter)
- t_c Time of Concentration (Hour)
- t_p Basin Lag (Hour)
- T_p Time of Peak (Hour)
- t_r Standard Duration of Effective Rainfall (Hour)
- **Tc** Time of Recession (Hour)





Constants, Functions, Measurements used

- Measurement: Length in Meter (m)

 Length Unit Conversion
- Measurement: Time in Hour (h)

 Time Unit Conversion
- Measurement: Area in Square Kilometer (km²)
 Area Unit Conversion
- Measurement: Volumetric Flow Rate in Cubic Meter per Second (m³/s)

 Volumetric Flow Rate Unit Conversion





Check other formula lists

- SCS Triangular Unit Hydrograph Synder's Synthetic- Unit Formulas
- Hydrograph Formulas 🖒
 - The Indian Practice Formulas



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