Confined Aquifers Formulas...





# **Confined Aquifers Formulas**

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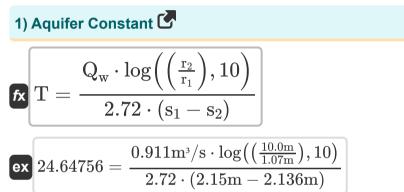




# List of 19 Confined Aquifers Formulas

## Confined Aquifers 🕑

### Aquifer Constant And Depth of Water in Well 🕑



2) Aquifer Constant given Difference in Drawdowns at Two Wells 🕑

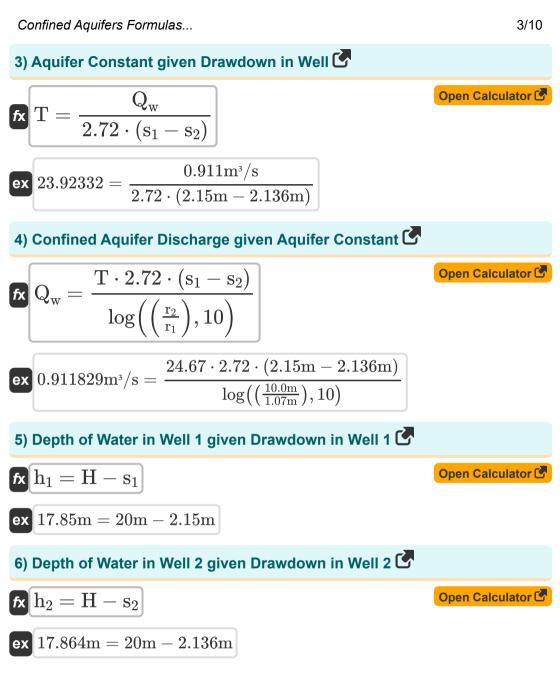
fx 
$$T = rac{Q_w}{2.72 \cdot \Delta s}$$
  
ex  $23.92332 = rac{0.911 {
m m}^3/{
m s}}{2.72 \cdot 0.014 {
m m}^3}$ 



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### Discharge And Drawdown in Well 🕑

## 7) Difference in Drawdowns at Two Wells given Aquifer Constant 🕑

$$\begin{array}{l} \hbox{(As)} = \left( \frac{Q_w}{2.72 \cdot T} \right) \end{array} \\ \hline \hbox{(As)} = \left( \frac{0.911 \mathrm{m}^3/\mathrm{s}}{2.72 \cdot 24.67} \right) \end{aligned} \\ \hline \hbox{(Box)} 0.013576\mathrm{m} = \left( \frac{0.911 \mathrm{m}^3/\mathrm{s}}{2.72 \cdot 24.67} \right) \end{aligned} \\ \hline \hbox{(Box)} 0.013576\mathrm{m} = \left( \frac{0.911 \mathrm{m}^3/\mathrm{s}}{2.72 \cdot 24.67} \right) \end{aligned} \\ \hline \hbox{(Box)} 0.013576\mathrm{m} = \left( \frac{0.911 \mathrm{m}^3/\mathrm{s}}{2.72 \cdot 24.67} \right) \end{aligned} \\ \hline \hbox{(Box)} 0.090\mathrm{(Calculator)} \end{aligned} \\ \hline \hbox{(Comparison)} \end{aligned} \\ \hline \hbox{(Comparison)} 0.939434\mathrm{m}^3/\mathrm{s} = \frac{24.67}{\frac{1}{2.72 \cdot (2.15\mathrm{m} - 2.136\mathrm{m})}} \end{aligned} \\ \hline \hbox{(Comparison)} 0.939434\mathrm{m}^3/\mathrm{s} = \frac{24.67 \cdot 2.72 \cdot 0.014\mathrm{m}} \end{aligned}$$



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10) Drawdown in Well 1 given Aquifer Constant 🕑

$$\mathbf{x} \left[ \mathrm{s}_1 = \mathrm{s}_2 + \left( rac{\mathrm{Q}_\mathrm{w} \cdot \log \left( \left( rac{\mathrm{r}_2}{\mathrm{r}_1} 
ight), 10 
ight)}{2.72 \cdot \mathrm{T}} 
ight) 
ight) 
ight)$$

$$\boxed{\texttt{ex}} 2.149987 \texttt{m} = 2.136 \texttt{m} + \left(\frac{0.911 \texttt{m}^3/\texttt{s} \cdot \log\bigl(\bigl(\frac{10.0 \texttt{m}}{1.07 \texttt{m}}\bigr), 10\bigr)}{2.72 \cdot 24.67}\right)$$

#### 11) Drawdown in Well 1 given Aquifer Constant and Discharge 🕑

fx 
$$s_1 = s_2 + \left(rac{Q_w}{2.72 \cdot T}
ight)$$
 ex  $2.149576m = 2.136m + \left(rac{0.911m^3/s}{2.72 \cdot 24.67}
ight)$ 

# 12) Drawdown in Well 1 given Thickness of Aquifer from Impermeable Layer

fx 
$$\mathbf{s}_1 = \mathbf{H} - \mathbf{h}_1$$
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ex 
$$2.15m = 20m - 17.85m$$

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13) Drawdown in Well 2 given Aquifer Constant 🕑

fx 
$$s_2 = s_1 - \left(rac{\mathrm{Q_w} \cdot \log\left(\left(rac{\mathrm{r}_2}{\mathrm{r}_1}
ight), 10
ight)}{2.72 \cdot \mathrm{T}}
ight)$$

$$\begin{array}{||c||} \hline \text{ex} 2.136013 \mathrm{m} = 2.15 \mathrm{m} - \left( \frac{0.911 \mathrm{m}^3/\mathrm{s} \cdot \log \bigl( \bigl( \frac{10.0 \mathrm{m}}{1.07 \mathrm{m}} \bigr), 10 \bigr)}{2.72 \cdot 24.67} \right) \end{array}$$

14) Drawdown in Well 2 given Aquifer Constant and Discharge 🕑

fx 
$$s_2 = s_1 - \left(\frac{Q_w}{2.72 \cdot T}\right)$$

ex  $2.136424 \mathrm{m} = 2.15 \mathrm{m} - \left( rac{0.911 \mathrm{m}^3 \mathrm{/s}}{2.72 \cdot 24.67} 
ight)$ 

15) Drawdown in Well 2 given Thickness of Aquifer from Impermeable Layer

fx 
$$\mathbf{s}_2 = \mathbf{H} - \mathbf{h}_2$$

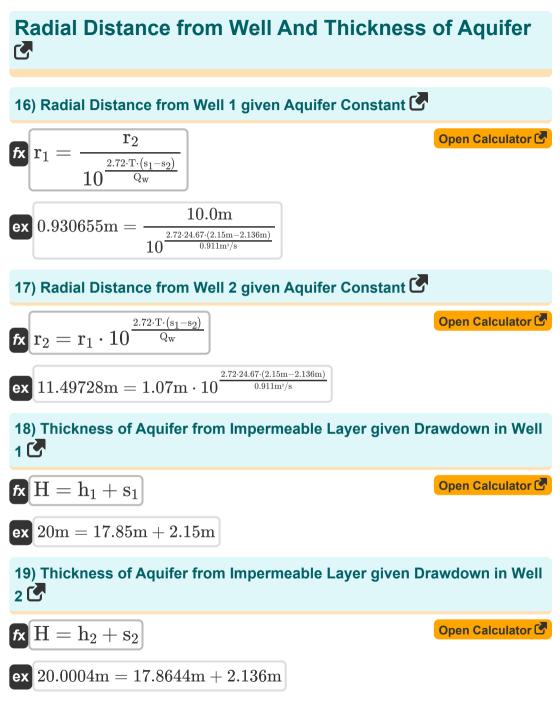
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ex 2.1356m = 20m - 17.8644m



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## Variables Used

- H Thickness of Aquifer (Meter)
- h1 Depth of Water in Well 1 (Meter)
- h<sub>2</sub> Depth of Water in Well 2 (Meter)
- **Q**<sub>w</sub> Discharge (Cubic Meter per Second)
- **r<sub>1</sub>** Radial Distance at Observation Well 1 (Meter)
- **r**<sub>2</sub> Radial Distance at Observation Well 2 (Meter)
- S1 Drawdown in Well 1 (Meter)
- S2 Drawdown in Well 2 (Meter)
- T Aquifer Constant
- Δs Difference in Drawdowns (Meter)



## **Constants, Functions, Measurements used**

- Function: log, log(Base, Number) Logarithmic function is an inverse function to exponentiation.
- Measurement: Length in Meter (m) Length Unit Conversion
- Measurement: Volumetric Flow Rate in Cubic Meter per Second (m<sup>3</sup>/s) Volumetric Flow Rate Unit Conversion



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 Unsteady Flow Formulas C

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