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Open Rectangular Basin and Seiches Formulas

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List of 8 Open Rectangular Basin and Seiches Formulas

Open Rectangular Basin and Seiches

1) Length of Basin for Open Rectangular Basin

$$fx \quad l_B = T_n \cdot (1 + (2 \cdot N)) \cdot \frac{\sqrt{[g] \cdot D}}{4}$$

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

$$ex \quad 53.69776m = 5.5s \cdot (1 + (2 \cdot 1.3)) \cdot \frac{\sqrt{[g] \cdot 12m}}{4}$$

2) Length of Basin given Natural Free Oscillating Period of Basin

$$fx \quad l_B = \frac{T_n \cdot N \cdot \sqrt{[g] \cdot D}}{2}$$

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

$$ex \quad 38.78171m = \frac{5.5s \cdot 1.3 \cdot \sqrt{[g] \cdot 12m}}{2}$$

3) Natural Free Oscillating Period of Basin

$$fx \quad T_n = \frac{2 \cdot l_B}{N \cdot \sqrt{[g] \cdot D}}$$

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d_img.jpg\)](#)

$$ex \quad 5.50004s = \frac{2 \cdot 38.782m}{1.3 \cdot \sqrt{[g] \cdot 12m}}$$



4) Natural Free Oscillating Period of Basin for Open Rectangular Basin

$$fx \quad T_n = 4 \cdot \frac{l_B}{(1 + (2 \cdot N)) \cdot \sqrt{[g] \cdot D}}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$ex \quad 3.972251s = 4 \cdot \frac{38.782m}{(1 + (2 \cdot 1.3)) \cdot \sqrt{[g] \cdot 12m}}$$

5) Number of Nodes along Axis of Basin for Open Rectangular Basin

$$fx \quad N = \frac{\left(4 \cdot \frac{l_B}{T_n \cdot \sqrt{[g] \cdot D}}\right) - 1}{2}$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$ex \quad 0.80001 = \frac{\left(4 \cdot \frac{38.782m}{5.5s \cdot \sqrt{[g] \cdot 12m}}\right) - 1}{2}$$

6) Number of Nodes along Axis of Basin given Natural Free Oscillating Period of Basin

$$fx \quad N = \frac{2 \cdot l_B}{T_n \cdot \sqrt{[g] \cdot D}}$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$ex \quad 1.30001 = \frac{2 \cdot 38.782m}{5.5s \cdot \sqrt{[g] \cdot 12m}}$$



7) Water Depth for Open Rectangular Basin

[Open Calculator !\[\]\(dfbd6b3763a6d1d9afaa974f64e2e4b5_img.jpg\)](#)

$$\text{fx } D = \frac{\left(4 \cdot \frac{l_B}{T_n \cdot (1+2 \cdot (N))}\right)^2}{[g]}$$

$$\text{ex } 6.259351\text{m} = \frac{\left(4 \cdot \frac{38.782\text{m}}{5.5\text{s} \cdot (1+2 \cdot (1.3))}\right)^2}{[g]}$$

8) Water Depth given Natural Free Oscillating Period of Basin

[Open Calculator !\[\]\(ec9132f1d27c8919987d92907322654d_img.jpg\)](#)

$$\text{fx } D = \frac{\left(2 \cdot \frac{l_B}{T_n \cdot N}\right)^2}{[g]}$$

$$\text{ex } 12.00018\text{m} = \frac{\left(2 \cdot \frac{38.782\text{m}}{5.5\text{s} \cdot 1.3}\right)^2}{[g]}$$





Variables Used

- **D** Water Depth (*Meter*)
- **l_B** Length of the Basin (*Meter*)
- **N** Number of Nodes along the Axis of a Basin
- **T_n** Natural Free Oscillating Period of a Basin (*Second*)



Constants, Functions, Measurements used

- **Constant:** **[g]**, 9.80665
Gravitational acceleration on Earth
- **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:** **Length** in Meter (m)
Length Unit Conversion 
- **Measurement:** **Time** in Second (s)
Time Unit Conversion 



Check other formula lists

- [Open Rectangular Basin and Seiches Formulas](#) 

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