calculatoratoz.com

unitsconverters.com

Wave Period Formulas

Calculators! Examples! Conversions!

Bookmark **calculatoratoz.com**, **unitsconverters.com**

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

Please leave your feedback here...

List of 16 Wave Period Formulas

Wave Period

1) Average Period for Wave Period of Same Energy as Irregular Train

Open Calculator

fx $$t_{avg} = \frac{p}{1.23}$$

ex $$6.097561\text{s} = \frac{7.5}{1.23}$$

2) Wave period for horizontal fluid particle displacements

Open Calculator

fx $$P_h = \sqrt{4 \cdot \pi \cdot \lambda \cdot \cosh\left(2 \cdot \pi \cdot \frac{D}{\lambda} / H \cdot [g] \cdot \cosh\left(2 \cdot \pi \cdot \frac{D_{Z+d}}{\lambda}\right) \cdot \sin(\theta)\right) - (\varepsilon)}$$

ex $$20.1876 = \sqrt{4 \cdot \pi \cdot 26.8\text{m} \cdot \cosh\left(2 \cdot \pi \cdot \frac{1.5\text{m}}{26.8\text{m}} / 3\text{m} \cdot [g] \cdot \cosh\left(2 \cdot \pi \cdot \frac{2\text{m}}{26.8\text{m}}\right) \cdot \sin(30^\circ)\right) - (0.4\text{m})}$$

3) Wave Period for Known Deepwater Celerity

Open Calculator

fx $$p = \frac{C \cdot 2 \cdot \pi}{[g]}$$

ex $$6.407066 = \frac{010\text{m/s} \cdot 2 \cdot \pi}{[g]}$$

4) Wave Period for Mediterranean Sea

Open Calculator

fx $$p = 4 + 2 \cdot (H)^{0.7}$$

ex $$8.315339 = 4 + 2 \cdot (3\text{m})^{0.7}$$

5) Wave Period for North Atlantic Ocean

Open Calculator

fx $$p = 2.5 \cdot H$$

ex $$7.5 = 2.5 \cdot 3\text{m}$$

6) Wave Period for North Sea

Open Calculator

fx $$P_n = 3.94 \cdot H_s^{0.376}$$

ex $$18.93004 = 3.94 \cdot (65\text{m})^{0.376}$$

7) Wave Period given Deepwater Celerity of SI systems Units of Meters and Seconds

Open Calculator

fx $$p = \frac{C}{1.56}$$

ex $$6.410256 = \frac{010\text{m/s}}{1.56}$$

8) Wave Period given Deepwater Celerity of Units of Meters and Seconds

Open Calculator

fx $$T = \frac{C}{5.12}$$

ex $$1.953125\text{m/s} = \frac{010\text{m/s}}{5.12}$$

9) Wave Period given Deepwater Wavelength of SI Systems Units of Meters and Seconds

Open Calculator

fx $$T = \sqrt{\frac{\lambda_o}{1.56}}$$

ex $$2.118296\text{m/s} = \sqrt{\frac{7\text{m}}{1.56}}$$

10) Wave Period given Deepwater Wavelength of Units of Meters and Seconds

Open Calculator

fx $$T = \sqrt{\frac{\lambda_o}{5.12}}$$

ex $$1.169268\text{m/s} = \sqrt{\frac{7\text{m}}{5.12}}$$

11) Wave Period given Radian Frequency of Wave

Open Calculator

fx $$T = \frac{2 \cdot \pi}{\omega}$$

ex $$1.013417\text{m/s} = \frac{2 \cdot \pi}{6.2\text{rad/s}}$$

12) Wave Period given Wave Celerity

Open Calculator

fx $$T = \frac{\lambda}{C}$$

ex $$2.68\text{m/s} = \frac{26.8\text{m}}{010\text{m/s}}$$

13) Wave Period given Wave Celerity and Wavelength

Open Calculator

fx $$p = \frac{C \cdot 2 \cdot \pi}{[g] \cdot \tanh\left(2 \cdot \pi \cdot \frac{D}{\lambda}\right)}$$

ex $$18.96387 = \frac{010\text{m/s} \cdot 2 \cdot \pi}{[g] \cdot \tanh\left(2 \cdot \pi \cdot \frac{1.5\text{m}}{26.8\text{m}}\right)}$$

14) Wave period given wave depth and wavelength

Open Calculator

fx $$P = \frac{\lambda \cdot \omega}{[g]} \cdot \tanh(k \cdot D)$$

ex $$5.624156 = \frac{26.8\text{m} \cdot 6.2\text{rad/s}}{[g]} \cdot \tanh(0.23 \cdot 1.5\text{m})$$

15) Wave Period given Wavelength and Water Depth

Open Calculator

fx $$P = 2 \cdot \frac{\pi}{\left(\left(2 \cdot \pi \cdot \frac{[g]}{\lambda}\right) \cdot \tanh\left(2 \cdot \pi \cdot \frac{D}{\lambda}\right)\right)^{0.5}}$$

ex $$7.129037 = 2 \cdot \frac{\pi}{\left(\left(2 \cdot \pi \cdot \frac{[g]}{26.8\text{m}}\right) \cdot \tanh\left(2 \cdot \pi \cdot \frac{1.5\text{m}}{26.8\text{m}}\right)\right)^{0.5}}$$

16) Wave Period of same Energy

Open Calculator

fx $p = 1.23 \cdot t_{avg}$

ex $7.38 = 1.23 \cdot 6s$

Variables Used

- **C** Celerity of the Wave *(Meter per Second)*
- **D** Water Depth *(Meter)*
- D_{Z+d} Distance above the Bottom *(Meter)*
- **H** Wave Height *(Meter)*
- H_s Significant Wave Height *(Meter)*
- **k** Wave Number
- **p** Coastal Wave Period
- **P** Wave Period
- P_h Wave Period for Horizontal Fluid Particle
- P_n Wave Period in North Sea
- **T** Period of Wave *(Meter per Second)*
- t_{avg} Average Time *(Second)*
- **ε** Fluid Particle Displacements *(Meter)*
- **θ** Phase Angle *(Degree)*
- **λ** Wavelength *(Meter)*
- λ_o Deep-Water Wavelength *(Meter)*
- **ω** Wave Angular Frequency *(Radian per Second)*

Constants, Functions, Measurements used

- Constant: **pi**, 3.14159265358979323846264338327950288
  Archimedes' constant
- Constant: **[g]**, 9.80665
  Gravitational acceleration on Earth
- Function: **cosh**, cosh(Number)
  The hyperbolic cosine function is a mathematical function that is defined as the ratio of the sum of the exponential functions of x and negative x to 2.
- Function: **sin**, sin(Angle)
  Sine is a trigonometric function that describes the ratio of the length of the opposite side of a right triangle to the length of the hypotenuse.
- 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.
- Function: **tanh**, tanh(Number)
  The hyperbolic tangent function (tanh) is a function that is defined as the ratio of the hyperbolic sine function (sinh) to the hyperbolic cosine function (cosh).
- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Time** in Second (s)
  Time Unit Conversion
- Measurement: **Speed** in Meter per Second (m/s)
  Speed Unit Conversion
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion
- Measurement: **Angular Frequency** in Radian per Second (rad/s)
  Angular Frequency Unit Conversion

Check other formula lists

- Cnoidal Wave Theory Formulas
- Horizontal and Vertical Semi-Axis of Ellipse Formulas
- Parametric Spectrum Models Formulas
- Wave Energy Formulas
- Wave Parameters Formulas
- Wave Period Formulas
- Wave Period Distribution and Wave Spectrum Formulas
- Zero-Crossing Method Formulas

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

5/17/2024 | 5:38:57 AM UTC

Please leave your feedback here...