calculatoratoz.com

unitsconverters.com

Rear Wheel Braking for Racing Car 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 19 Rear Wheel Braking for Racing Car Formulas

Rear Wheel Braking for Racing Car 🗗

Effects on Front Wheel (FW) 🗗

1) Friction Coefficient between Wheel and Road Surface on Front Wheel 🗗

Open Calculator 🗗

$$fx \quad \mu = \frac{W \cdot (b - x) \cdot \frac{\cos(\theta)}{R_F} - b}{h}$$

$$ex \quad 0.456032 = \frac{13000N \cdot (2.7m - 1.2m) \cdot \frac{\cos(10°)}{7103N} - 2.7m}{0.007919m}$$

2) Height of C.G. from Road Surface on Front Wheel 🗗

Open Calculator 🗗

$$fx \quad h = \frac{W \cdot (b - x) \cdot \frac{\cos(\theta)}{R_F} - b}{\mu}$$

$$ex \quad 0.007524m = \frac{13000N \cdot (2.7m - 1.2m) \cdot \frac{\cos(10°)}{7103N} - 2.7m}{0.48}$$

3) Horizontal Distance of C.G from Rear Axle on Front Wheel 🗗

Open Calculator 🗗

$$fx \quad x = (b - \mu \cdot h) - R_F \cdot \frac{b - \mu \cdot h}{W \cdot \cos(\theta)}$$

ex

$$1.200311m = (2.7m - 0.48 \cdot 0.007919m) - 7103N \cdot \frac{2.7m - 0.48 \cdot 0.007919m}{13000N \cdot \cos(10°)}$$

4) Normal Reaction Force at Front Wheel ⚡

fx $$R_F = W \cdot (b - x) \cdot \frac{\cos(\theta)}{b + \mu \cdot h}$$

Open Calculator ⚡

ex $$7102.501N = 13000N \cdot (2.7m - 1.2m) \cdot \frac{\cos(10°)}{2.7m + 0.48 \cdot 0.007919m}$$

5) Slope of Road on Front Wheel ⚡

fx $$\theta = a\cos\left(\frac{R_F}{W \cdot \frac{b-x}{b+\mu \cdot h}}\right)$$

Open Calculator ⚡

ex $$9.977162° = a\cos\left(\frac{7103N}{13000N \cdot \frac{2.7m - 1.2m}{2.7m + 0.48 \cdot 0.007919m}}\right)$$

6) Weight of Vehicle on Front Wheel ⚡

fx $$W = \frac{R_F}{(b - x) \cdot \frac{\cos(\theta)}{b+\mu \cdot h}}$$

Open Calculator ⚡

ex $$13000.91N = \frac{7103N}{(2.7m - 1.2m) \cdot \frac{\cos(10°)}{2.7m + 0.48 \cdot 0.007919m}}$$

7) Wheel Base on Front Wheel ⚡

fx $$b = \frac{R_F \cdot \mu \cdot h + W \cdot x \cdot \cos(\theta)}{W \cdot \cos(\theta) - R_F}$$

Open Calculator ⚡

ex $$2.700237m = \frac{7103N \cdot 0.48 \cdot 0.007919m + 13000N \cdot 1.2m \cdot \cos(10°)}{13000N \cdot \cos(10°) - 7103N}$$

Effects on Rear Wheel (RW) 🔗

8) Braking Retardation on Rear Wheel 🔗

Open Calculator 🔗

fx $$a = [g] \cdot \left(\frac{\mu \cdot (b - x) \cdot \cos(\theta)}{b + \mu \cdot h} - \sin(\theta) \right)$$

ex $$0.86885 \text{m/s}^2 = [g] \cdot \left(\frac{0.48 \cdot (2.7\text{m} - 1.2\text{m}) \cdot \cos(10°)}{2.7\text{m} + 0.48 \cdot 0.007919\text{m}} - \sin(10°) \right)$$

9) Friction Coefficient between Wheel and Road Surface on Rear Wheel 🔗

Open Calculator 🔗

fx $$\mu = \frac{R_R \cdot b - W \cdot x \cdot \cos(\theta)}{h \cdot (W \cdot \cos(\theta) - R_R)}$$

ex $$0.480028 = \frac{5700\text{N} \cdot 2.7\text{m} - 13000\text{N} \cdot 1.2\text{m} \cdot \cos(10°)}{0.007919\text{m} \cdot (13000\text{N} \cdot \cos(10°) - 5700\text{N})}$$

10) Friction Coefficient using Retardation on Rear Wheel 🔗

Open Calculator 🔗

fx $$\mu = \frac{\left(\frac{a}{[g]} + \sin(\theta) \right) \cdot b}{(b - x) \cdot \cos(\theta) - \left(\left(\frac{a}{[g]} + \sin(\theta) \right) \cdot h \right)}$$

ex $$0.48 = \frac{\left(\frac{0.86885 \text{m/s}^2}{[g]} + \sin(10°) \right) \cdot 2.7\text{m}}{(2.7\text{m} - 1.2\text{m}) \cdot \cos(10°) - \left(\left(\frac{0.86885 \text{m/s}^2}{[g]} + \sin(10°) \right) \cdot 0.007919\text{m} \right)}$$

11) Height of C.G. from Road Surface on Rear Wheel ⎘

fx $h = \dfrac{R_R \cdot b - W \cdot x \cdot \cos(\theta)}{\mu \cdot (W \cdot \cos(\theta) - R_R)}$

Open Calculator ⎘

ex $0.007919\text{m} = \dfrac{5700\text{N} \cdot 2.7\text{m} - 13000\text{N} \cdot 1.2\text{m} \cdot \cos(10^\circ)}{0.48 \cdot (13000\text{N} \cdot \cos(10^\circ) - 5700\text{N})}$

12) Height of C.G. using Retardation on Rear Wheel ⎘

fx $h = \dfrac{\dfrac{\mu \cdot (b-x) \cdot \cos(\theta)}{\left(\frac{a}{[g]}\right) + \sin(\theta)} - b}{\mu}$

Open Calculator ⎘

ex $0.007919\text{m} = \dfrac{\dfrac{0.48 \cdot (2.7\text{m} - 1.2\text{m}) \cdot \cos(10^\circ)}{\left(\frac{0.86885\text{m/s}^2}{[g]}\right) + \sin(10^\circ)} - 2.7\text{m}}{0.48}$

13) Horizontal Distance of C.G. from Rear Axle on Rear Wheel ⎘

fx $x = R_R \cdot \dfrac{b + \mu \cdot h}{W \cdot \cos(\theta)} - \mu \cdot h$

Open Calculator ⎘

ex $1.2\text{m} = 5700\text{N} \cdot \dfrac{2.7\text{m} + 0.48 \cdot 0.007919\text{m}}{13000\text{N} \cdot \cos(10^\circ)} - 0.48 \cdot 0.007919\text{m}$

14) Horizontal Distance of C.G. using Retardation on Rear Wheel ⎘

fx $x = b - \left(\left(\dfrac{a}{[g]} + \sin(\theta)\right) \cdot \dfrac{b + \mu \cdot h}{\mu \cdot \cos(\theta)}\right)$

Open Calculator ⎘

ex $1.2\text{m} = 2.7\text{m} - \left(\left(\dfrac{0.86885\text{m/s}^2}{[g]} + \sin(10^\circ)\right) \cdot \dfrac{2.7\text{m} + 0.48 \cdot 0.007919\text{m}}{0.48 \cdot \cos(10^\circ)}\right)$

15) Normal Reaction Force at Rear Wheel ⬏

fx $$R_R = W \cdot (x + \mu \cdot h) \cdot \frac{\cos(\theta)}{b + \mu \cdot h}$$

Open Calculator ⬏

ex

$$5699.999N = 13000N \cdot (1.2m + 0.48 \cdot 0.007919m) \cdot \frac{\cos(10°)}{2.7m + 0.48 \cdot 0.007919m}$$

16) Slope of Road on Rear Wheel ⬏

fx $$\theta = a\cos\left(\frac{R_R}{W \cdot \frac{x + \mu \cdot h}{b + \mu \cdot h}}\right)$$

Open Calculator ⬏

ex $$9.999966° = a\cos\left(\frac{5700N}{13000N \cdot \frac{1.2m + 0.48 \cdot 0.007919m}{2.7m + 0.48 \cdot 0.007919m}}\right)$$

17) Weight of Vehicle on Rear Wheel ⬏

fx $$W = \frac{R_R}{(x + \mu \cdot h) \cdot \frac{\cos(\theta)}{b + \mu \cdot h}}$$

Open Calculator ⬏

ex $$13000N = \frac{5700N}{(1.2m + 0.48 \cdot 0.007919m) \cdot \frac{\cos(10°)}{2.7m + 0.48 \cdot 0.007919m}}$$

18) Wheel Base of Vehicle using Retardation on Rear Wheel ⎋

fx $b = \dfrac{\left(\frac{a}{[g]} + \sin(\theta)\right) \cdot \mu \cdot h + \mu \cdot x \cdot \cos(\theta)}{\mu \cdot \cos(\theta) - \left(\frac{a}{[g]} + \sin(\theta)\right)}$

Open Calculator ⎋

ex $2.7\text{m} = \dfrac{\left(\frac{0.86885\text{m/s}^2}{[g]} + \sin(10°)\right) \cdot 0.48 \cdot 0.007919\text{m} + 0.48 \cdot 1.2\text{m} \cdot \cos(10°)}{0.48 \cdot \cos(10°) - \left(\frac{0.86885\text{m/s}^2}{[g]} + \sin(10°)\right)}$

19) Wheel Base on Rear Wheel ⎋

fx $b = \left(W \cdot (x + \mu \cdot h) \cdot \dfrac{\cos(\theta)}{R_R}\right) - \mu \cdot h$

Open Calculator ⎋

ex $2.7\text{m} = \left(13000\text{N} \cdot (1.2\text{m} + 0.48 \cdot 0.007919\text{m}) \cdot \dfrac{\cos(10°)}{5700\text{N}}\right) - 0.48 \cdot 0.007919\text{m}$

Variables Used

- **a** Braking Retardation BRW *(Meter per Square Second)*
- **b** Vehicle Wheelbase BRW *(Meter)*
- **h** Height of C.G. of Vehicle BRW *(Meter)*
- R_F Normal Reaction at Front Wheel BRW *(Newton)*
- R_R Normal Reaction at Rear Wheel BRW *(Newton)*
- **W** Vehicle Weight BRW *(Newton)*
- **x** Horizontal Distance of C.G. from Rear Axle BRW *(Meter)*
- **θ** Road Inclination Angle BRW *(Degree)*
- **μ** Friction Coefficient between Wheels and Ground BRW

Constants, Functions, Measurements used

- Constant: **[g]**, 9.80665 Meter/Second²
  Gravitational acceleration on Earth
- Function: **acos**, acos(Number)
  Inverse trigonometric cosine function
- Function: **cos**, cos(Angle)
  Trigonometric cosine function
- Function: **sin**, sin(Angle)
  Trigonometric sine function
- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Acceleration** in Meter per Square Second (m/s²)
  Acceleration Unit Conversion
- Measurement: **Force** in Newton (N)
  Force Unit Conversion
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion

Check other formula lists

- **Brakes Applied on All Wheels for Racing Car Formulas** 🗗
- **Front Wheel Braking for Racing Cars Formulas** 🗗
- **Rear Wheel Braking for Racing Car Formulas** 🗗

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

12/4/2023 | 5:12:07 PM UTC   *Please leave your feedback here...*