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Load on Wheels in Race Cars Formulas

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List of 13 Load on Wheels in Race Cars Formulas

Load on Wheels in Race Cars 🔗

1) Front Lateral Load Transfer given Load on Front Inside Wheel in Cornering 🔗

fx $W_F = W - W_i$

Open Calculator 🔗

ex $60kg = 460kg - 400kg$

2) Front Lateral Load Transfer given Load on Front Outside Wheel in Cornering 🔗

fx $W_F = W' - W$

Open Calculator 🔗

ex $226kg = 686kg - 460kg$

3) Maximum Speed of Vehicle 🔗

fx $$V_{max} = \frac{\pi \cdot n_{p\,max} \cdot r_d}{30 \cdot i_o \cdot i_{g\,min}}$$

Open Calculator 🔗

ex $$157.0164m/s = \frac{\pi \cdot 35000rev/min \cdot 0.45m}{30 \cdot 2 \cdot 0.55}$$

4) Rear Lateral Load Transfer given Load on Rear Inside Wheel in Cornering ⌷

fx $W_F = W - W_i$

Open Calculator ⌷

ex $60kg = 460kg - 400kg$

5) Rear Lateral Load Transfer given Load on Rear Outside Wheel in Cornering ⌷

fx $W_R = W' - W$

Open Calculator ⌷

ex $226kg = 686kg - 460kg$

6) Wheel Load on Front Inside Wheel during Cornering ⌷

fx $W' = W - W_F$

Open Calculator ⌷

ex $234kg = 460kg - 226kg$

7) Wheel Load on Front Inside Wheel in Static Condition given Load during Cornering ⌷

fx $W = W' + W_F$

Open Calculator ⌷

ex $912kg = 686kg + 226kg$

8) Wheel Load on Front Outside Wheel during Cornering ⌷

fx $W' = W + W_F$

Open Calculator ⌷

ex $686kg = 460kg + 226kg$

9) Wheel Load on Front Outside Wheel in Static Condition given Load during Cornering 🔗

fx $W = W' - W_F$ **Open Calculator** 🔗

ex $460 kg = 686 kg - 226 kg$

10) Wheel Load on Rear Inside Wheel during Cornering 🔗

fx $W' = W - W_R$ **Open Calculator** 🔗

ex $298.13 kg = 460 kg - 161.87 kg$

11) Wheel Load on Rear Inside Wheel in Static Condition given Load during Cornering 🔗

fx $W = W' + W_R$ **Open Calculator** 🔗

ex $847.87 kg = 686 kg + 161.87 kg$

12) Wheel Load on Rear Outside Wheel during Cornering 🔗

fx $W' = W + W_R$ **Open Calculator** 🔗

ex $621.87 kg = 460 kg + 161.87 kg$

13) Wheel Load on Rear Outside Wheel in Static Condition given Load during Cornering 🔗

fx $W = W' - W_R$ **Open Calculator** 🔗

ex $524.13 kg = 686 kg - 161.87 kg$

Variables Used

- $i_{g\ min}$ Minimum Gear Ratio of Transmission

- i_o Gear Ratio of Final Drive

- $n_{p\ max}$ Speed of Engine at Maximum Power *(Revolution per Minute)*

- r_d Effective Radius of Wheel *(Meter)*

- V_{max} Maximum Speed of Vehicle *(Meter per Second)*

- W Load on Individual Wheel in Static Condition *(Kilogram)*

- W' Individual Load Wheel during Cornering *(Kilogram)*

- W_F Front Lateral Load Transfer *(Kilogram)*

- W_i Individual Load on Inner Wheel during Cornering *(Kilogram)*

- W_R Rear Lateral Load Transfer *(Kilogram)*

Constants, Functions, Measurements used

- Constant: **pi**, 3.14159265358979323846264338327950288
  Archimedes' constant
- Measurement: **Length** in Meter (m)
  Length Unit Conversion ⬈
- Measurement: **Weight** in Kilogram (kg)
  Weight Unit Conversion ⬈
- Measurement: **Speed** in Meter per Second (m/s)
  Speed Unit Conversion ⬈
- Measurement: **Angular Velocity** in Revolution per Minute (rev/min)
  Angular Velocity Unit Conversion ⬈

Check other formula lists

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