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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

$$fx \quad W_f = W - W_i$$

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

$$ex \quad 124.1352\text{kg} = 524.1352413\text{kg} - 400\text{kg}$$

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

$$fx \quad W_f = W' - W$$

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

$$ex \quad 161.8648\text{kg} = 686\text{kg} - 524.1352413\text{kg}$$

3) Maximum Speed of Vehicle

$$fx \quad V_m = \frac{\pi \cdot n_p \cdot r_d}{30 \cdot i_o \cdot i_g}$$

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

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



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

$$fx \quad W_f = W - W_i$$

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

$$ex \quad 124.1352\text{kg} = 524.1352413\text{kg} - 400\text{kg}$$

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

$$fx \quad W_r = W' - W$$

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

$$ex \quad 161.8648\text{kg} = 686\text{kg} - 524.1352413\text{kg}$$

6) Wheel Load on Front Inside Wheel during Cornering

$$fx \quad W' = W - W_f$$

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

$$ex \quad 298.1352\text{kg} = 524.1352413\text{kg} - 226\text{kg}$$

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

$$fx \quad W = W' + W_f$$

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754_img.jpg\)](#)

$$ex \quad 912\text{kg} = 686\text{kg} + 226\text{kg}$$

8) Wheel Load on Front Outside Wheel during Cornering

$$fx \quad W' = W + W_f$$

[Open Calculator !\[\]\(aff7c69c44a5e015f18c35867ef3f5c3_img.jpg\)](#)

$$ex \quad 750.1352\text{kg} = 524.1352413\text{kg} + 226\text{kg}$$



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

$$fx \quad W = W' - W_f$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$ex \quad 460kg = 686kg - 226kg$$

10) Wheel Load on Rear Inside Wheel during Cornering

$$fx \quad W' = W - W_r$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$ex \quad 362.2652kg = 524.1352413kg - 161.87kg$$

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

$$fx \quad W = W' + W_r$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$ex \quad 847.87kg = 686kg + 161.87kg$$

12) Wheel Load on Rear Outside Wheel during Cornering

$$fx \quad W' = W + W_r$$

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

$$ex \quad 686.0052kg = 524.1352413kg + 161.87kg$$

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

$$fx \quad W = W' - W_r$$

[Open Calculator !\[\]\(40770d9ed6ed4f1222ebf89a1396e8b2_img.jpg\)](#)

$$ex \quad 524.13kg = 686kg - 161.87kg$$







Variables Used

- i_g Minimum Gear Ratio of Transmission
- i_o Gear Ratio of Final Drive
- n_p Speed of Engine at Maximum Power (*Revolution per Minute*)
- r_d Effective Radius of Wheel (*Meter*)
- V_m 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

- [Rates for Axle Suspension in Race Car Formulas](#) 
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