Skidpad Lateral Acceleration from Lap Time

Steady-state lateral acceleration, speed and lap time on a skidpad circle from its radius and clockwise and anticlockwise lap times.

Method: Uniform circular motion

Input parameters

Unit system: SI

Parameter	Value	Unit
Radius of the vehicle path (centre of gravity)	30.500	m
Lap time clockwise	11.200	s
Lap time anticlockwise	11.400	s

Calculated results

Parameter	Value	Unit
Mean lap time	11.300	s
Mean speed	61.053	km/h
Lateral acceleration	0.96157	g

Notes for this case

• On a circle of radius R a lap of time t gives speed v = 2πR/t and lateral acceleration a_y = v²/R = 4π²R/t². Averaging the two directions cancels small asymmetries in the car and slope of the pad. Use the radius of the path actually driven by the centre of gravity, usually the painted radius plus half the track; on a 200 ft (61 m) diameter pad that is about 30.5 m.

Formula and method

$$v = \frac{2\pi R}{\bar{t}}, \quad a_y = \frac{4\pi^2 R}{\bar{t}^2}$$

Variables

R	Radius of the vehicle path (centre of gravity)	m
t_1	Lap time clockwise	s
t_2	Lap time anticlockwise	s
$\bar{t}$	Mean lap time	s
v	Mean speed	m/s
a_y	Lateral acceleration	m/s²

Method and standards

Skidpad.

Assumptions and limits

- Constant speed on a level circle.

References

Uniform circular motion

Report details

Report reference	FCC-JRFQ-C9MT (the same inputs always give the same reference)
Generated	23 November 2026, 18:00 UTC
Calculator	Skidpad Lateral Acceleration from Lap Time
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/automotive/vehicle-dynamics/skidpad-lateral-acceleration

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.