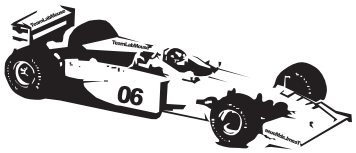
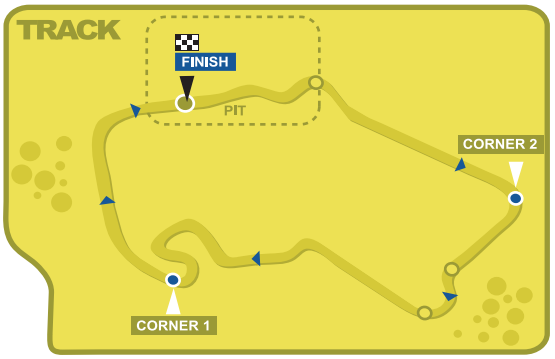
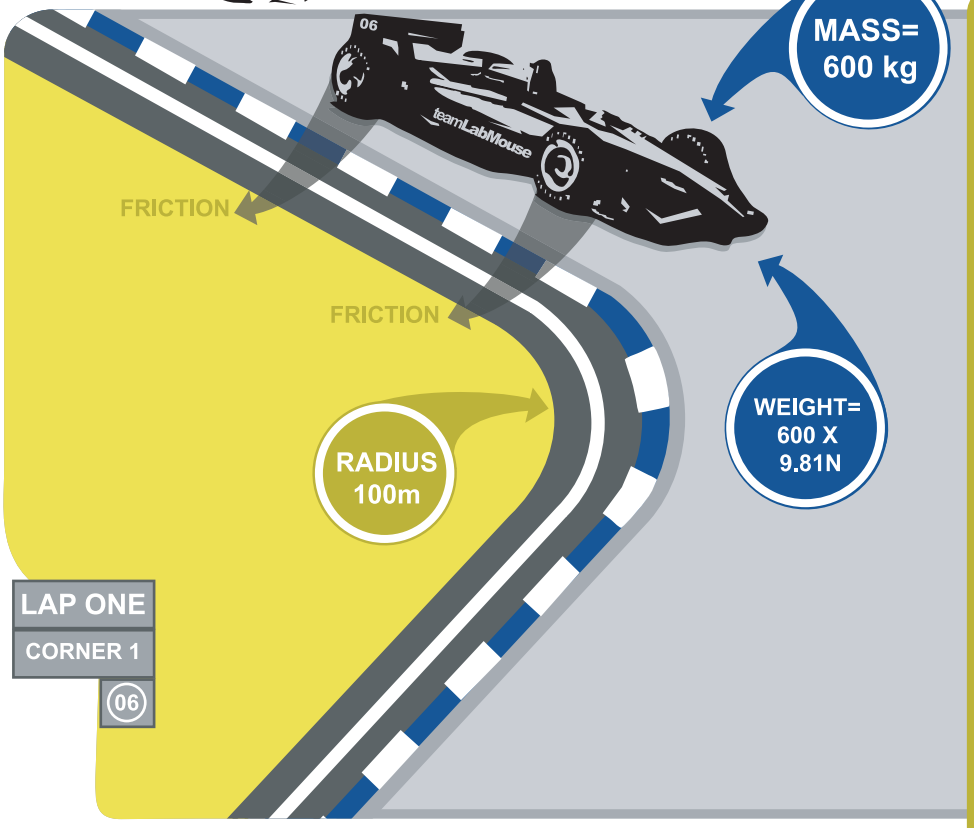
TeamLabMouse 06

Understanding circular motion is a vital skill required by scientists and engineers. **LabMouse 6** covers the key points in this essential topic along with oscillations, capacitors and drawing and interpreting graphs.
In this example we will calculate the maximum speed a car can travel around a corner on a racing track.







- MASS = 600 kg
- COEFFICIENT OF FRICTION (μ) = 0.7 IN DRY CONDITIONS
- RADIUS = 100 m

- FRICTION (F) = μR [COEFFICIENT OF FRICTION x REACTION FROM ROAD]
- REACTION = WEIGHT = 600 x 9.81 = 5886 N
- ∴ FRICTION = 0.7 x 5886 = 4120.2 N

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- CENTRIPETAL FORCE = $\frac{\text{MASS x SPEED}^2}{\text{RADIUS OF CIRCLE}}$
- IN THIS CASE; THE MAXIMUM CENTRIPETAL FORCE = FRICTION

$$4120.2 = \frac{600 \times \text{SPEED}^2}{100}$$

- $\text{SPEED}^2 = \frac{4120.2 \times 100}{600}$
- ∴ SPEED = 26.2 ms^{-1} (94.3 kmh^{-1})

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