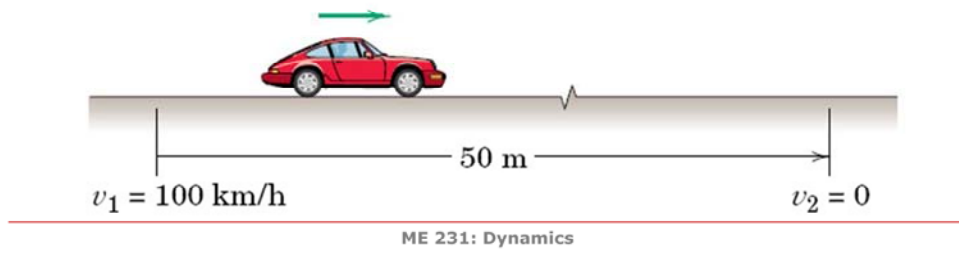**Newton's 2nd Law: Exercise**
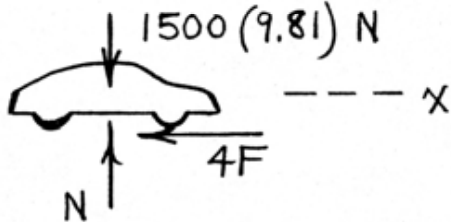
$$\boxed{\mathbf{F} = m\mathbf{a}}$$

During a brake test, a **1500 kg** car with a speed of 100 km/h is stopped with a constant **deceleration** in a distance of 50 m.

Determine the braking **force F**.

50 m

$v_1 = 100$ km/h $v_2 = 0$

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See Notes Page view for solution.

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$$v_2^{\,2} - v_1^{\,2} = 2a(x_2 - x_1)$$

$$0^2 - \left(\frac{100}{3.6}\right)^2 = 2a_x(50), \quad a_x = -7.72 \text{ m/s}^2$$

1500 (9.81) N

$-\,-\,-\,x$

4F

N

$$\Sigma F_x = ma_x: \quad -4F = 1500(-7.72)$$

$$F = 2890 \text{ N}$$

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