

A 12,400-kg airplane launched by a catapult from an aircraft carrier is accelerated from 0 to 210km/h in 4 s. How many times the acceleration due to gravity is the airplane's acceleration?

Answer:

$$v = 210\text{km/h} = 58.33\text{m/s}$$

$$v_0 = 0\text{m/s}$$

$$t = 4\text{s}$$

$$g = 9.8 \frac{\text{m}}{\text{s}^2}$$

$$v - v_0 = at$$

$$a = \frac{(v - v_0)}{t} = 14.58 \frac{\text{m}}{\text{s}^2}$$

$$a = 1.49g$$