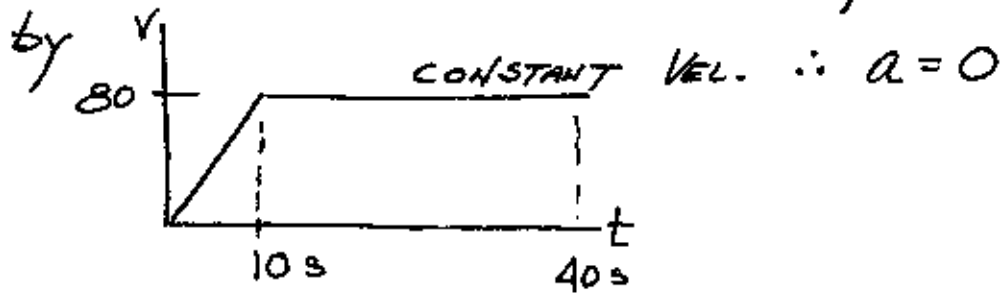


JET PLANE TRAVELS ON RUNWAY



$0 \leq t \leq 10s$  RAMP = PROPORTIONAL

slope  $\frac{\Delta v}{\Delta t} = \frac{80 \text{ m/s}}{10s} = 8 \frac{\text{m}}{\text{s}^2} = \text{CONSTANT} = a$   
SLOPE

$\therefore \boxed{v = 8t} = \frac{ds}{dt}$  }  $\int_0^{10} 8t dt = \int_0^s ds$   
 $4t^2 \Big|_0^{10} = s$

$\boxed{s = 4t^2 \text{ PARABOLIC}}$

$\boxed{a = 8 \frac{\text{m}}{\text{s}^2}}$

$s_{t=10s} = 400 \text{ m.}$

Significant

$10s \leq t \leq 40s$ , CONSTANT VEL, ACC = 0

$\boxed{a = 0}$   $\boxed{v = 80 \frac{\text{m}}{\text{s}}} = \frac{ds}{dt}$

$\int_{10}^{40} 80 dt = \int_{400}^s ds$

$80t \Big|_{10}^{40} = s \Big|_{400}^s$

$\therefore \boxed{s = 80t + 400 \text{ m}}$  RAMP

$80[40 - 10] = s - 400 \therefore s_{t=40s} = 2800 \text{ m.}$

