Intro to Kinematics PPT

1. Josie

400m track
80s per lap

a) Distance$_{(1\ lap)}$ = 400m (d)
Displacement = 0m (d⃗)

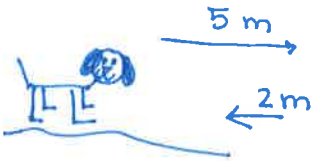
b) Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{400\text{m}}{80\text{s}}$

Speed = 5 m/s (v)

Velocity = $\frac{\text{Displacement}}{\text{Time}} = \frac{0\text{m}}{80\text{s}}$

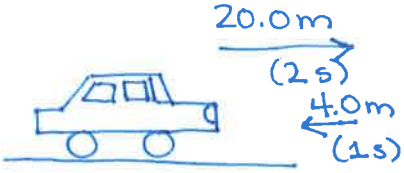
Velocity = 0 m/s (v⃗)

2.



a) Distance = 7m
Displacement = (+5m) + (−2m)
Displacement = +3m

3.



Velocity = $\frac{\text{Displacement}}{\text{Time}} = \frac{(+20.0\text{m}) + (-4.0\text{m})}{2.0\text{s} + 1.0\text{s}}$

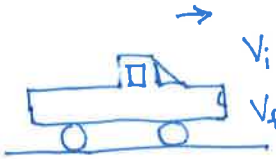
$= \frac{+16.0\text{m}}{3.0\text{ s}}$

Velocity = +5.3 m/s

Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{20.0\text{m} + 4.0\text{m}}{2.0\text{s} + 1.0\text{s}} = \frac{24.0\text{m}}{3.0\text{s}}$

Speed = 8.0 m/s

4.



V_i = 8.0 m/s
V_f = 20.0 m/s
t = 3.0s

Acceleration = $\frac{V_f - V_i}{t} = \frac{20.0\text{m/s} - 8.0\text{m/s}}{3.0\text{ s}}$

Acceleration = +4.0 m/s² (a⃗)

5.

V_i = 18 m/s
V_f = 0.0 m/s
t = 6.0s

Acceleration = $\frac{V_f - V_i}{t} = \frac{0.0\text{m/s} - 18\text{m/s}}{6.0\text{ s}}$

Acceleration = −3.0 m/s²