

1) SCALAR - No DIRECTION
→ TIME

2) ADD UP GIVES LARGEST RESULTANT



3) $v_i = 30 \text{ m/s}$

$v_f = 23 \text{ m/s}$

$t = 2 \text{ s}$

$a = ?$

$$v_f = v_i + at$$

$$a = \frac{v_f - v_i}{t}$$

$$= \frac{23 \text{ m/s} - 30 \text{ m/s}}{2 \text{ s}}$$

$$= \frac{-7 \text{ m/s}}{2 \text{ s}}$$

$$= -3.5 \text{ m/s}^2$$

4) $d = 12 \text{ m}$

$t = 4 \text{ s}$

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

$a = ?$

$$d = \cancel{v_i t} + \frac{1}{2} a t^2$$

$$d = \frac{1}{2} a t^2$$

$$a = \frac{2d}{t^2} = \frac{2(12 \text{ m})}{(4 \text{ s})^2} = \frac{24 \text{ m}}{16 \text{ s}^2}$$

$$= 1.5 \text{ m/s}^2$$

$$5) V_x = 40 \text{ m/s}$$

$$V_y = 30 \text{ m/s}$$

HORIZONTAL NEVER CHANGES

No Friction \Rightarrow NO
UNBALANCED FORCES

as ROCKET RISES IT WILL LOSE
SPEED/VELOCITY @ 9.81 m/s^2

\Rightarrow LOSE @ 20 m/s

$$30 \text{ m/s} - 20 \text{ m/s} = \textcircled{10 \text{ m/s}}$$

6) GREATEST ANGLE WILL ACHIEVE GREATEST
HEIGHT



7) INERTIA IS BASED ON MASS ONLY

\Rightarrow LARGEST MASS HAS GREATEST INERTIA

\Rightarrow 1500 kg CAR

8) $w = 8 \text{ N}$ wood block on wood floor

$$\mu_k = .30$$

$$F_{fk} = ?$$

$$\begin{aligned} F_f &= \mu_k F_N \\ &= (.30)(8 \text{ N}) \\ &= 2.4 \text{ N} \end{aligned}$$

9) IN EQUILIBRIUM \Rightarrow NO UNBALANCED FORCES

1) accelerating X

2) accelerating X

3) all Forces Balanced \Rightarrow \checkmark

4) changing direction \Rightarrow accelerating X



all balanced \Rightarrow IN EQUILIBRIUM

10) at HIGHEST POINT, OR FOR THAT MATTER ALL OBJECTS IN FREE FALL AND THIS ROCK IS IN FREE FALL THE ONLY FORCE ACTING ON THE ROCK IS GRAVITY F_g

