

# ACCELERATION

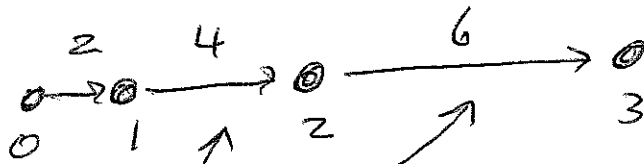
- $v$  can be + or -
- $\text{speed} = |v|$

$$a \equiv \frac{v_f - v_i}{\Delta t}$$

definition

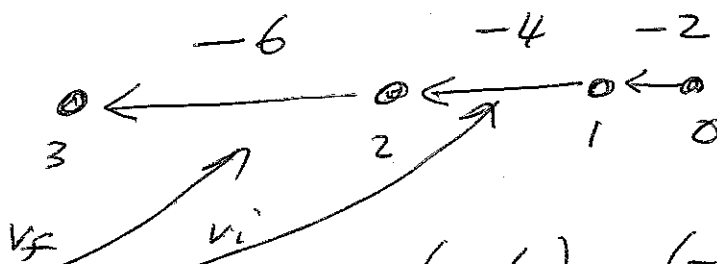
## Examples

- If "speed is increasing in positive direction", accel is positive



check  $a = \frac{v_f - v_i}{\Delta t} = \frac{6 - 4}{1} = 2$  positive

- If "speed is increasing in negative direction", i.e., velocity is decreasing, accel is negative



check  $a = \frac{v_f - v_i}{\Delta t} = \frac{(-6) - (-4)}{1} = -6 + 4 = -2$  negative

• If "speed is slowing down" in the positive direction, i.e., velocity is decreasing, accel is negative

check  $a = \frac{v_f - v_i}{t} = \frac{4 - 6}{1} = -2$  negative

• If "speed in the negative direction is slowing down", i.e., velocity is increasing, accel is positive

check  $a = \frac{v_f - v_i}{t} = \frac{(-4) - (-6)}{1} = -4 + 6 = 2$  positive

SUMMARY

$$a = \frac{\Delta v}{\Delta t}$$

$a > 0$ if <u>V increasing</u>	( 2 to 4, -4 to -2 )
$a < 0$ if <u>V decreasing</u>	( 4 to 2, -2 to -4 )