
ACCELERATION
The sudden realization that the 4.5 Hemi might just be a tad too much power for you, the pup, the kids, the groceries and the soccer team.

Acceleration (a)

acceleration describes all situations where the speed is changing.

symbol to represent acceleration is a

v_f = final speed

v_i = initial speed

t = time

Formula: $a = \frac{\Delta v}{t} = \frac{v_f - v_i}{t}$

During **constant acceleration (uniform acceleration)** the same change in speed occurs in each equal interval of time. The object accelerates at the same rate.

Average acceleration (a_{av})occurs when acceleration changes over a period of time. The acceleration rate varies.

If you are slowing down your acceleration can be negative

For ALL our calculations acceleration is assumed to be constant

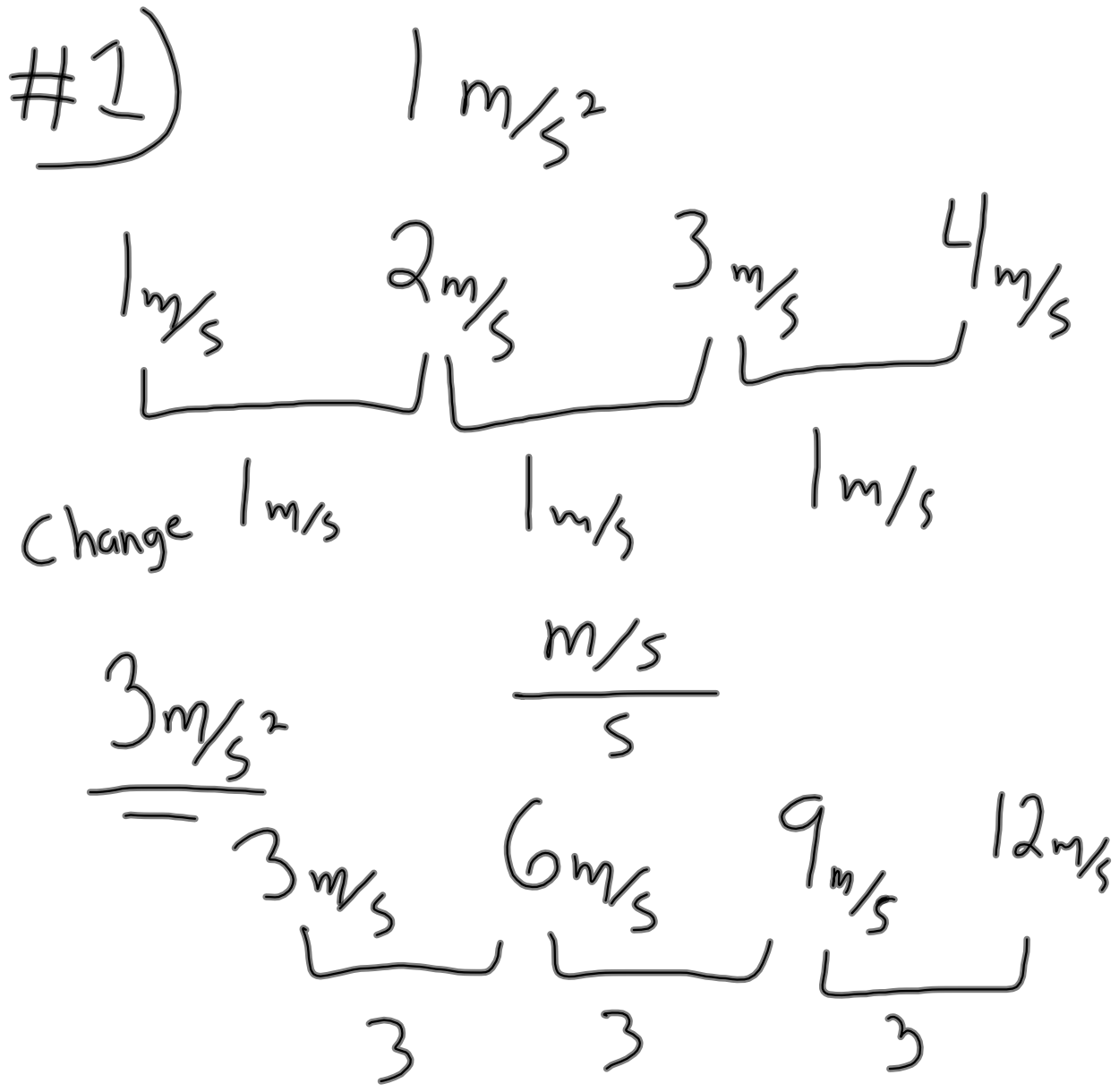
If your acceleration was $2m/s^2$ that means you are increasing your speed by 2m/s for every second you travel.

So at the end of the 1st second your instantaneous speed is 2m/s; at the end of the 2nd second your instantaneous speed is 4m/s.

If your acceleration was $4.5m/s^2$ how fast would you be going at the end of the 2nd second?

9.0m/s

Complete questions pg 388 #1-5, 7-9



$$a = \frac{\Delta v}{t}$$ → change in speed

$$a = \frac{5.0\ m/s}{4.5\ s} = 1.11\ m/s^2$$

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⑤ $a = 8.0\ m/s^2$ $\Delta v = ?$

$t = 4.0\ s$

$$a = \frac{\Delta v}{t} \rightarrow 8 \overset{\times 4}{=} \frac{\Delta v}{4} \overset{\times 4}{}$$

$$32\ m/s = \Delta v$$

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

but use $\Rightarrow$ $\boxed{at = v_f - v_i}$

a = acceleration

t = time

#2 $a = 3.0\ m/s^2$ $v_f = 25\ m/s$

$v_i = 8.0\ m/s$ $t = ?$

$(3)t = (25) - (8)$

$3t = 25 - 8$

$3t = 17$

$\frac{3t}{3} = \frac{17}{3}$

$\boxed{t = 4.3\ s}$