

1. A car travels 10 km East and then 75 km West, what is the total distance travelled and the **displacement** of the car?
 $+10 - 75$

Distance) 85 km

Displacement) -65 km
65 km [W]

/4

2. A motorist traveling on a straight stretch of open highway sets his cruise control at 60.0 km/h. How far will he travel in 20 seconds? (leave answer in meter)

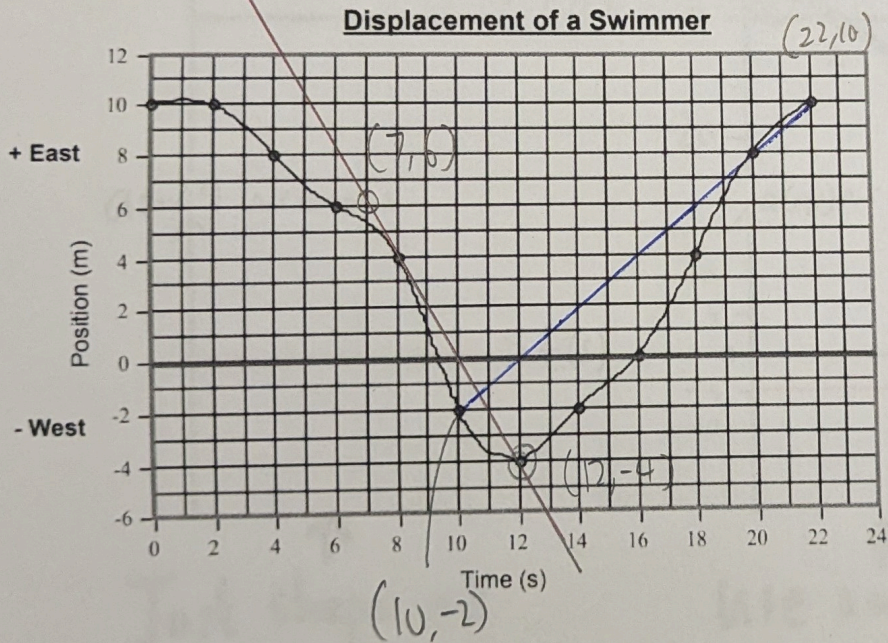
$60 \text{ km/h} \div 3.6 = 16.67 \text{ m/s}$ $V = \frac{d}{t}$ $d =$

Ans) 333 m

/3

3. (Show clear calculation and tangent line when needed) For the following Position-Time Graph...

- a. Calculate the **average velocity** between $t = 10 \text{ sec}$ to $t = 22 \text{ sec}$
 b. Calculate the **instantaneous velocity** at $t = 8 \text{ s}$ by first drawing a tangent line. Don't forget to include direction!!



$$\text{Avg } V = \frac{10 - (-2)}{22 - 10} = \frac{12}{12} = 1$$

$$\text{Inst Vel} = \frac{6 - (-4)}{7 - 12} = \frac{10}{-5} = -2 \text{ m/s}$$

Average Velocity and Dir) 1 m/s [E]

instantaneous Velocity and Dir) -2 m/s [W]

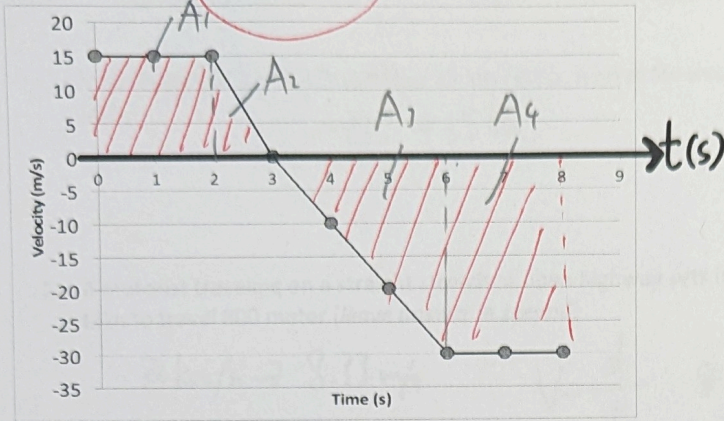
2 m/s [W]

1.7 - 2.3 ok

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2023 VA

3. Solve for the total displacement (0 to 8 seconds) from the v-t graph below. (2 marks)



$$A_1 = (15)(2) = 30$$

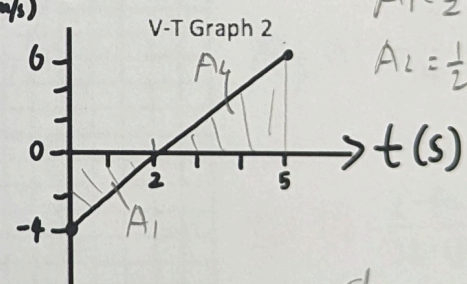
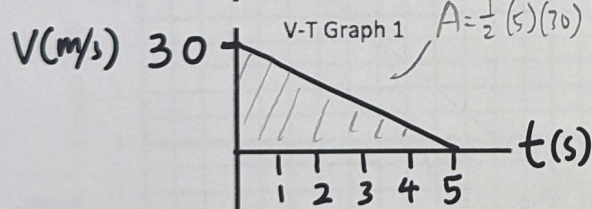
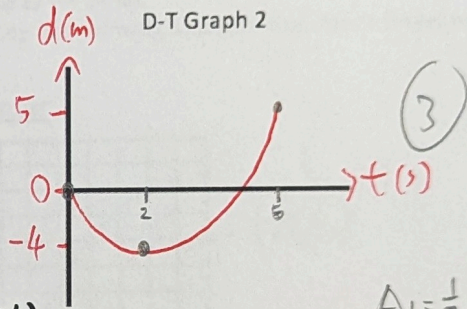
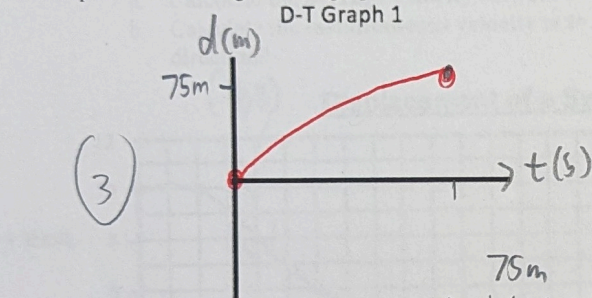
$$A_2 = (1)(15)\frac{1}{2} = 7.5$$

$$A_3 = \frac{1}{2}(3)(-30) = -45$$

$$A_4 = (2)(-30) = -60$$

Ans) -67.5 m / 4

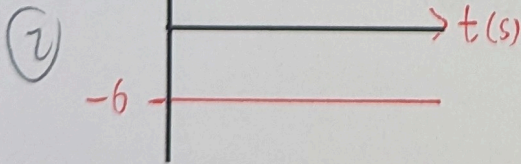
4. Complete the missing motion graphs



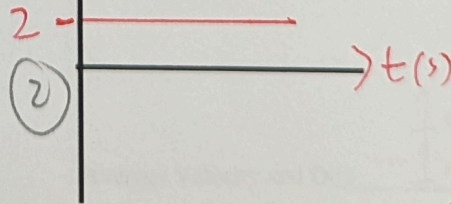
Slope = $\frac{30}{5} = 6$

a
(m/s²)

A-T Graph 1



A-T Graph 2



Slope = $\frac{10}{5} = 2$

10

(14)

27

1. A car travels 20 km South and then 35 km North, what is the total **distance** travelled and the **displacement** of the car?

$-20 + 35 \text{ km}$

Distance) 55 km

Displacement) 15 km [N]

/4

2. A motorist traveling on a straight stretch of open highway sets his cruise control at 30.0 km/h. How long will it take to travel 600 meter (leave answer in **second**)

$30 \text{ km/h} \rightarrow 8.33 \text{ m/s}$

$V = \frac{d}{t} \quad 8.33 = \frac{600}{t} \Rightarrow t = 72 \text{ sec}$

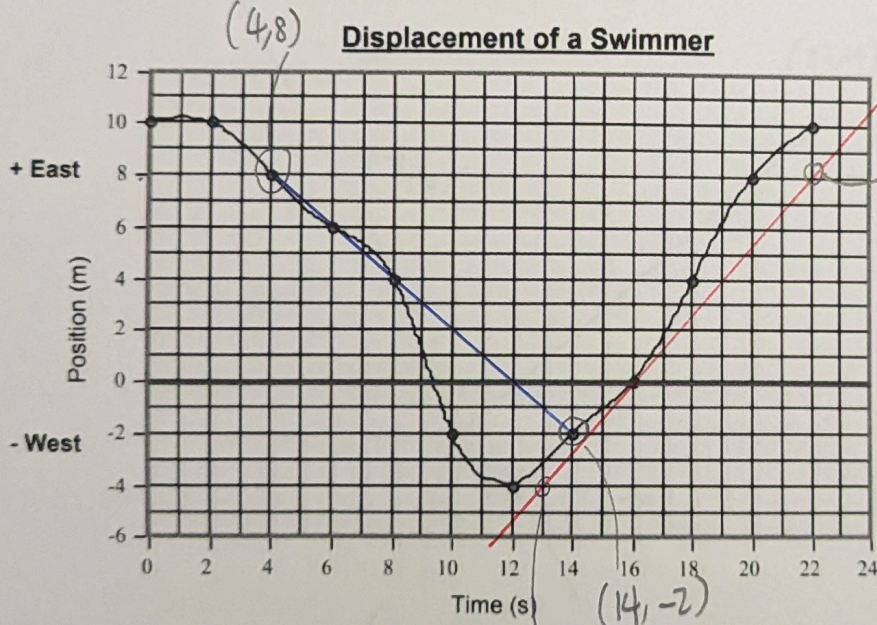
Ans) 72 sec

/3

3. (Show clear calculation and tangent line when needed) For the following Position-Time Graph...

a. Calculate the **average velocity** between $t = 4 \text{ sec}$ to $t = 14 \text{ sec}$

b. Calculate the **instantaneous velocity** at $t = 16 \text{ s}$ by first drawing a tangent line. Don't forget to include direction!!



$\text{Avg Vel} = \frac{-2 - 8}{14 - 4} = \frac{-10}{10} = -1$

$\text{Inst Vel} = \frac{8 - (-4)}{22 - 13} = \frac{12}{9} = 1.33$

Average Velocity and Dir) 1 m/s [W]
-1 m/s

instantaneous Velocity and Dir) 1.33 m/s [E]

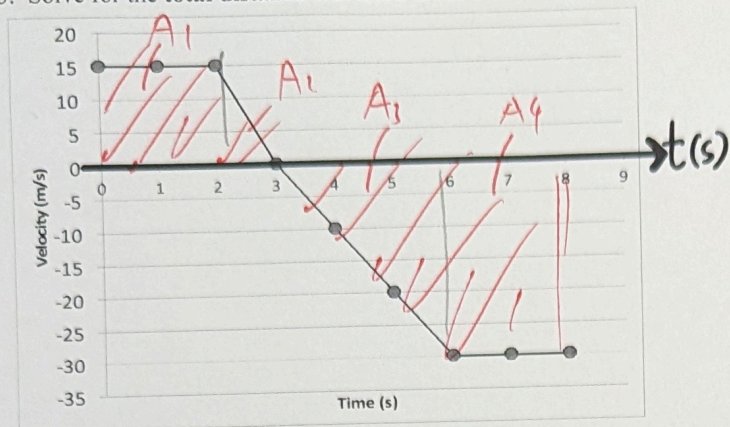
1.1 - 1.53 ok.

/6

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2023 VB

3. Solve for the total distance travelled from 0 to 8 seconds from the v-t graph below. DISTANCE not displacement



$$A_1 = (15)(2) = 30$$

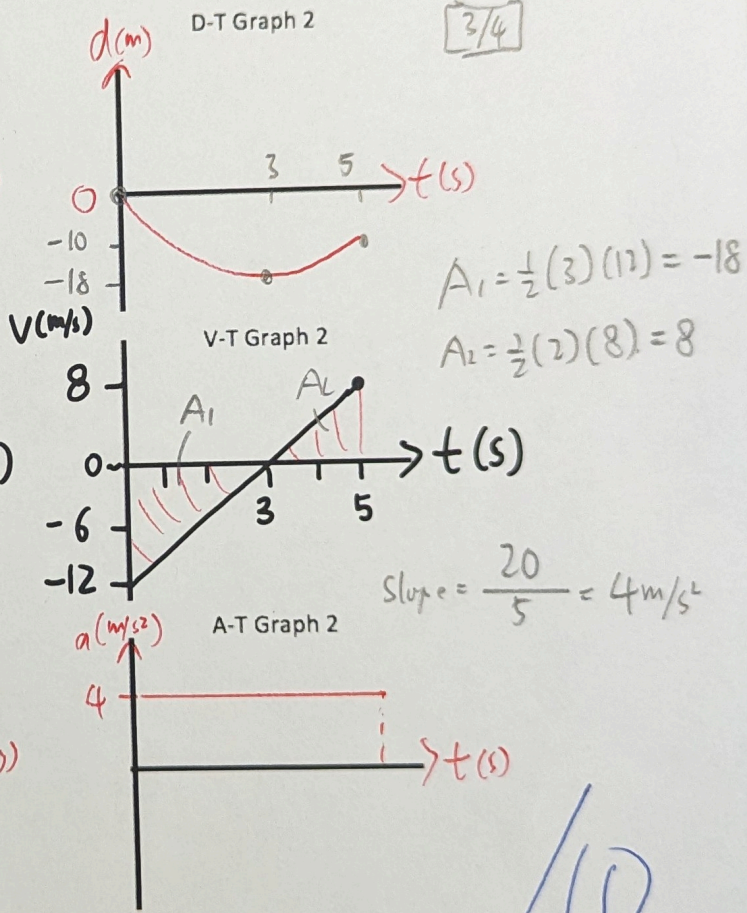
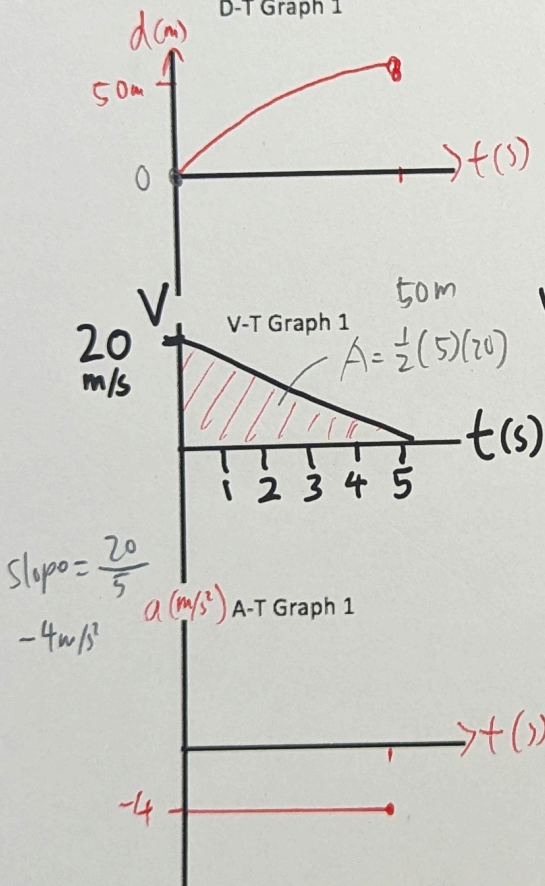
$$A_2 = \frac{1}{2}(1)(15) = 7.5$$

$$A_3 = \frac{1}{2}(2)(-30) = -30$$

$$A_4 = (2)(-30) = -60$$

Ans) $\frac{142.5 \text{ m}}{4}$
 -67.5 m
 $\frac{3}{4}$

4. Complete the missing motion graphs



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