

Name:

YEAR 11 HSC PHYSICS
8.4 – MOVING ABOUT
Worksheet – Displacement-Time Graphs

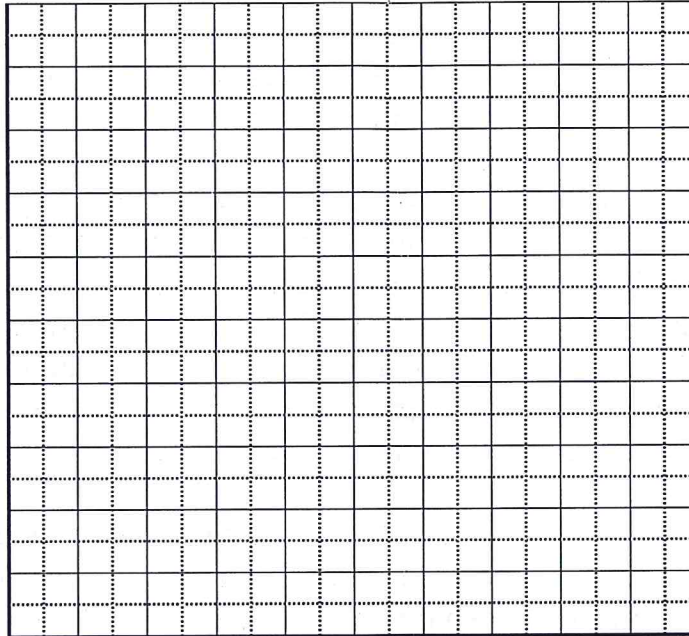
8.4.1.B

Set 1 – Drawing Displacement-Time Graphs

1. The table below shows the movement of a car as it travels along a straight road.

Time (s)	0	5	10	15	20	25	30	35	40	45	50
Displacement (m)	0	3	6	9	12	18	32	40	40	32	20

a) Graph the data on the grid below. *Label your axes! Use Pencil!*



b) Determine the displacement at 27.0 s.

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c) Identify how long the car took to travel 13.0 m.

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d) What was the velocity at 10.0 s? *(Hint: what is the displacement @ 10s?)*

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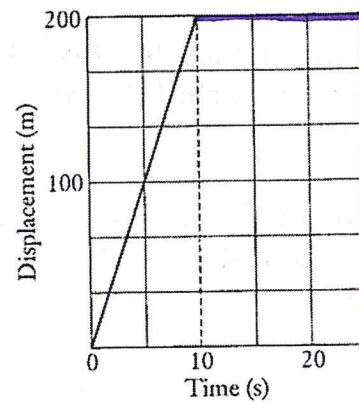
e) Determine the velocity at 45.0 s. *(Hint: What is the displacement @ 45s?)*

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Set 2 – Interpreting Displacement-Time Graphs

2. The displacement-time graph on the right represents the motion of a car accelerating from rest in a straight line.



a) Calculate the average speed between $t = 0$ s and $t = 10.0$ s.

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b) What is the ~~instantaneous~~ speed at $t = 20.0$ s?

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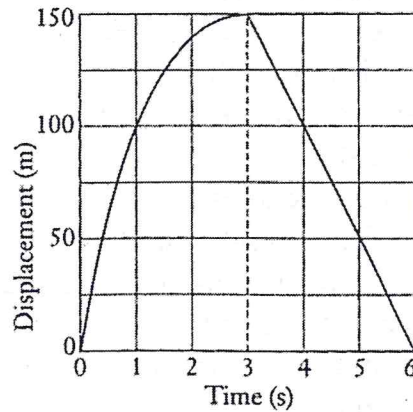
c) What is the displacement between $t = 0$ s and $t = 20.0$ s?

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d) Determine the average velocity between $t = 0$ s and $t = 20.0$ s.

(hint: calculate the total displacement)

3. The displacement-time graph on the right represents the motion of a motorbike along a straight race track.



a) Determine the displacement during the first three seconds.

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b) What is the displacement over the entire six seconds of the journey?

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c) What is the distance travelled during the six seconds of the journey?

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~~d)~~ Determine the instantaneous velocity at $t = 2.0$ s.

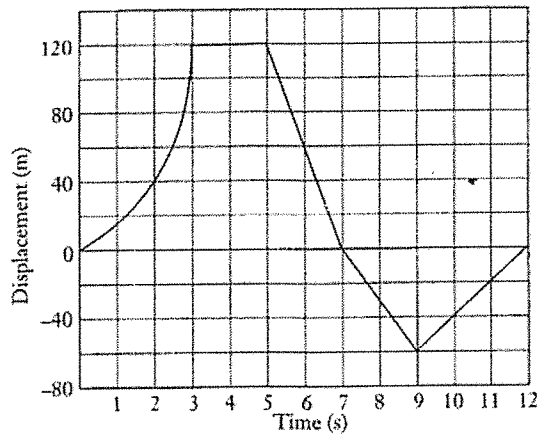
(SKIP)

e) Find the velocity at $t = 5.0$ s.

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f) Describe what happens at $t = 3$ s...

4. A dynamics cart in a physics laboratory moves in a straight line according to the displacement-time graph below.



- a) Calculate the displacement between $t = 0$ and $t = 3.0$ s.

- b) What is the speed at $t = 4.0$ s?

- c) Calculate the velocity at $t = 1.5$ s.

- d) Determine the velocity at $t = 11.0$ s.

e) During which time intervals was the cart moving in the positive direction (Choose all that apply!)

0s-3s 3s-5s 5s-7s 7s-9s 9s-12s

f) When was the cart at rest? (Choose all that apply!)

0s-3s 3s-5s 5s-7s 7s-9s 9s-12s

g) What distance was traveled in total? _____

h) What was the average speed over these 12 seconds? _____

i) What was the cart's average displacement? _____

ii) What was the cart's average velocity? _____

6. A distance-time graph for an insect flying in a straight line is shown on the right.

a) Determine how long it takes to travel between 5.0 and 10.0 m.

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b) Find how far it travels between 2.0 and 4.0 s.

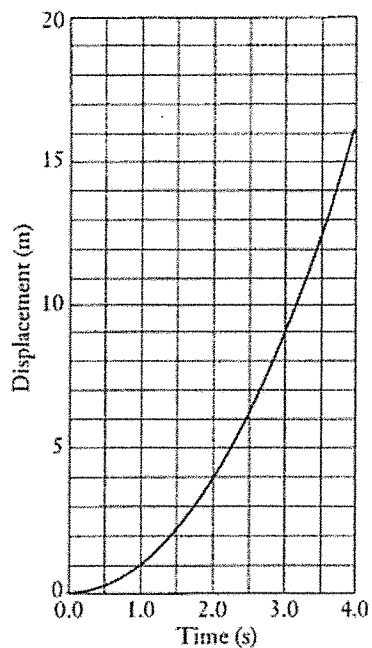
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c) Calculate the velocity at 3.0 s.

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d) IS the speed of the insect ever constant?
How do you know?



e) what is happening to the insect's speed over these four seconds?