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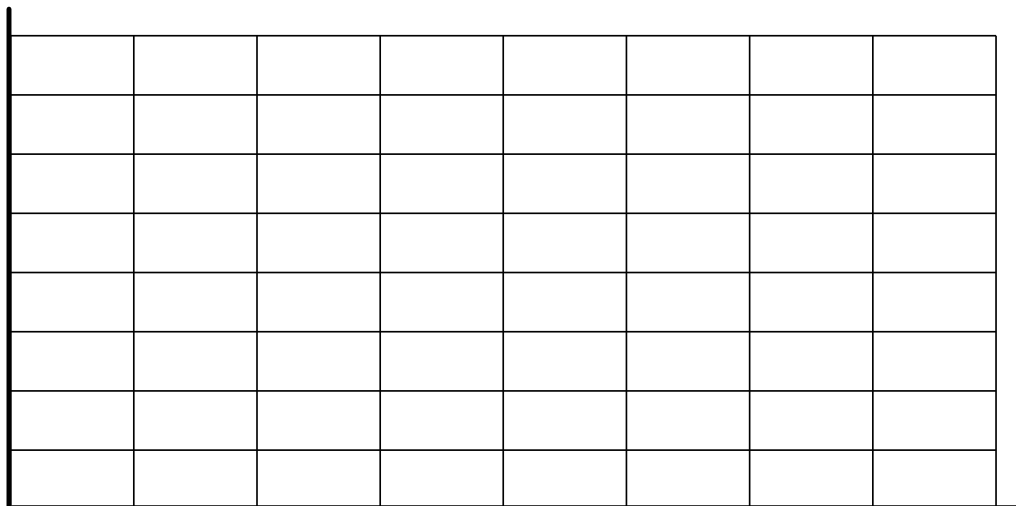
## DISTANCE-TIME GRAPHS

A Distance-Time graph (or DT graph), is a graph that represents an object's motion. The general form looks like the following:



**Ex: Graph the following on a distance-time graph**

Time (s)	0	1	2	3	4	5	6	7	8
Distance (m)	0	2	4	6	8	8	8	4	0





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## DISTANCE-TIME GRAPHS


In order to calculate the speed using a distance-time graph one must find the **SLOPE** of the graph.



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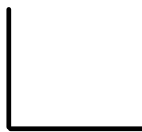
# DISTANCE-TIME GRAPHS

## SLOPE FACTS:

1.



2.



3.



4.



5.



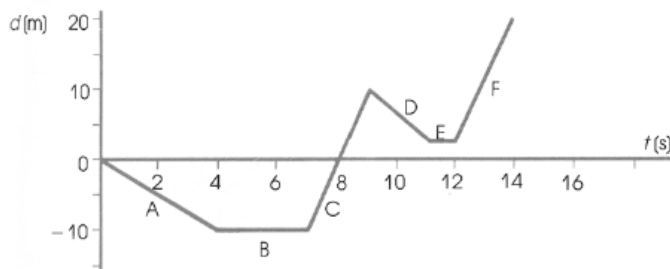


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# HOMWORK

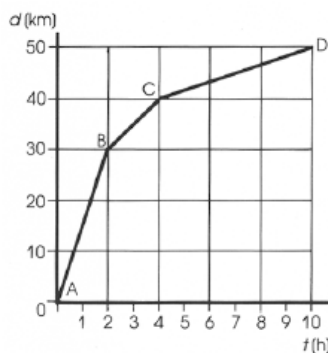
## Motion Graphs Worksheet

1. Find the velocity in each section of the following position-time graph. ( $-2.5 \text{ m/s}$ ,  $0$ ,  $10 \text{ m/s}$ ,  $-3.8 \text{ m/s}$ ,  $0$ ,  $8.8 \text{ m/s}$ )



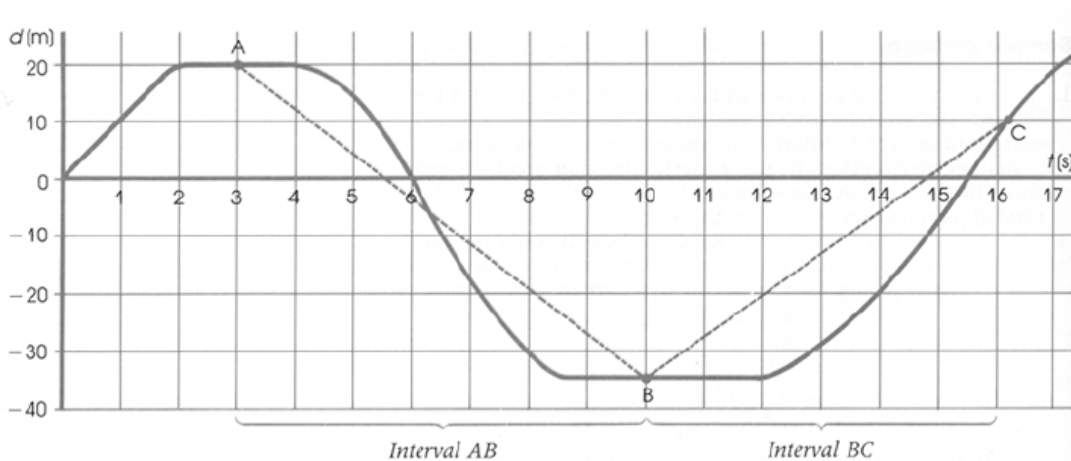
2. Using the graph below, determine the average velocity for these intervals:

- a. AB ( $15 \text{ km/h}$ )
- b. AD ( $5.0 \text{ km/h}$ )
- c. BD ( $2.5 \text{ km/h}$ )



3. Using the graph below, determine the average velocity for each of the following sections.

- a.  $t = 0 \text{ s}$  to  $t = 2 \text{ s}$  ( $10 \text{ m/s}$ )
- b.  $t = 6 \text{ s}$  to  $t = 12 \text{ s}$  ( $-5.8 \text{ m/s}$ )
- c.  $t = 6 \text{ s}$  to  $t = 15.5 \text{ s}$  ( $0$ )

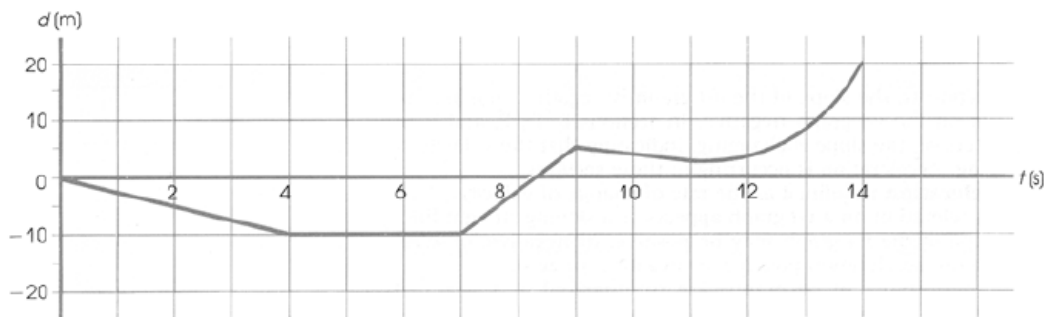




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# HOMWORK

4. The following graph is that of an object moving in a straight line. East is considered as the positive direction.
  - a. Determine the position of the object after 7.0 s. ( $-10\text{ m}$ )
  - b. The graph shows five distinct sections. Briefly, and in general terms, describe the motion of the object in each of these sections.
  - c. Considering the whole journey, calculate the average velocity. ( $1.4\text{ m/s}$ )
  - d. Find the instantaneous velocity at  $t = 13\text{ s}$ . ( $8\text{ m/s}$ )
  - e. Using an appropriate scale, draw a velocity-time graph from the position-time graph.



5. This graph below describes the motion of an object moving in a straight line. At the beginning it is going east. From the graph determine each of the following.
  - a. the object's displacement in the first 3.0 s ( $200\text{ m [E]}$ )
  - b. the object's displacement between  $t = 3.0\text{ s}$  and  $t = 5.0\text{ s}$  ( $0$ )
  - c. the total displacement of the object in 14 s ( $0$ )
  - d. the average velocity of the object from  $t = 0$  to  $t = 8.0\text{ s}$  ( $17.5\text{ m/s [E]}$ )

