

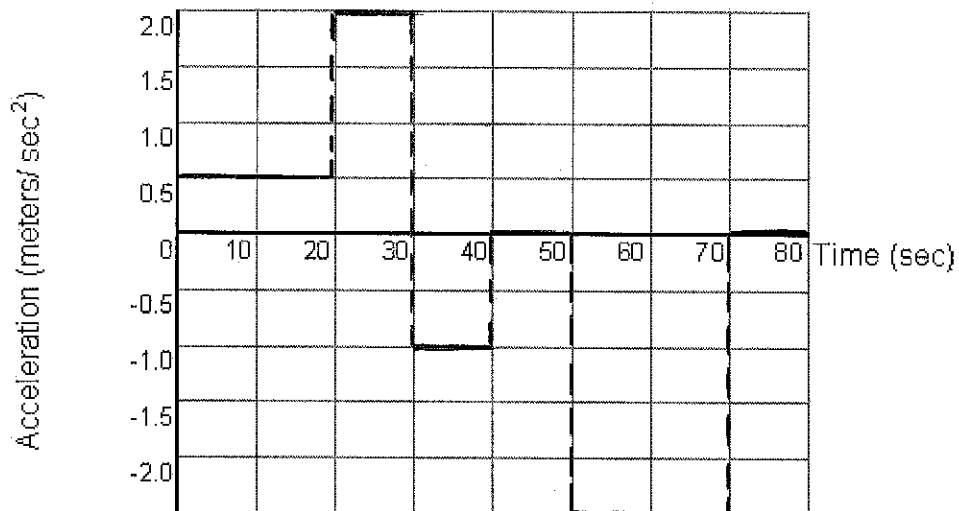
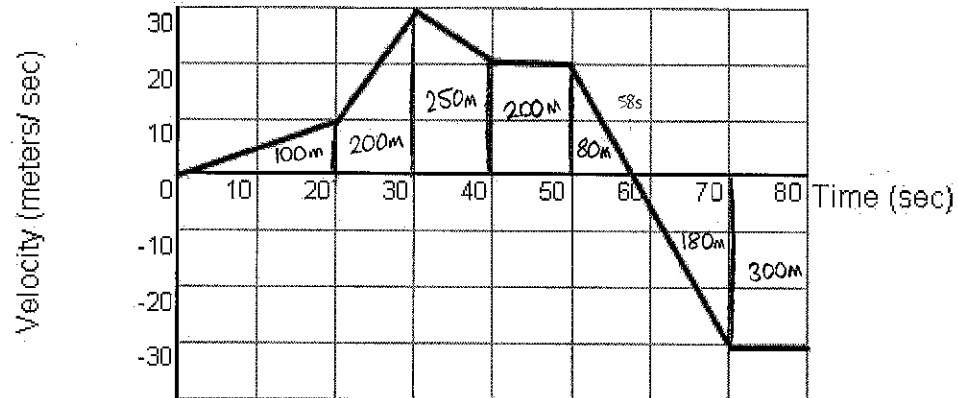
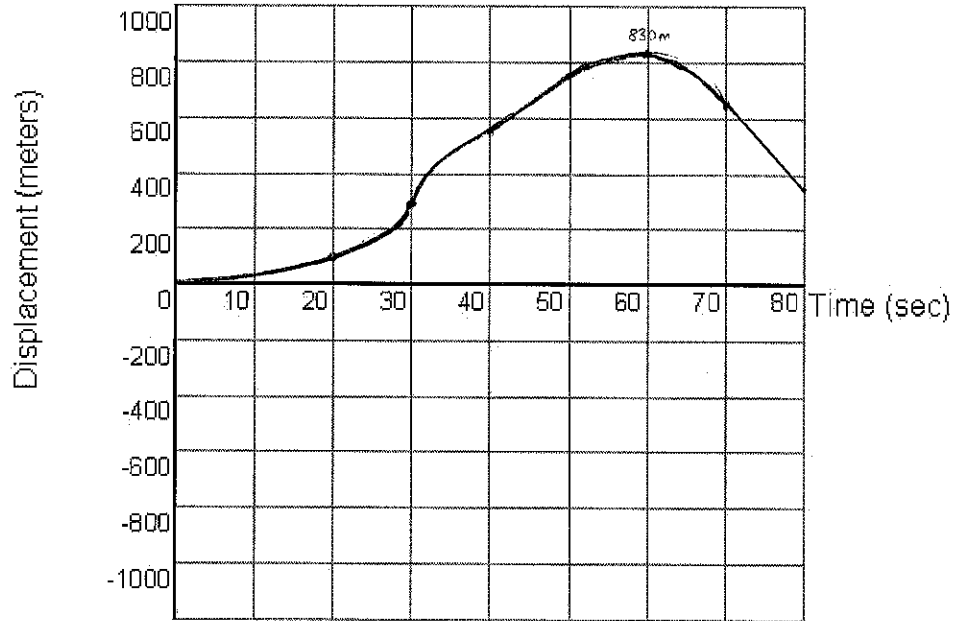
# SOLUTIONS

**Physics**  
Kinematic Graphs

## #1

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Period: \_\_\_\_\_

Given the graph of velocity vs. Time shown below, construct the graphs for acceleration and displacement on the graphs provided.



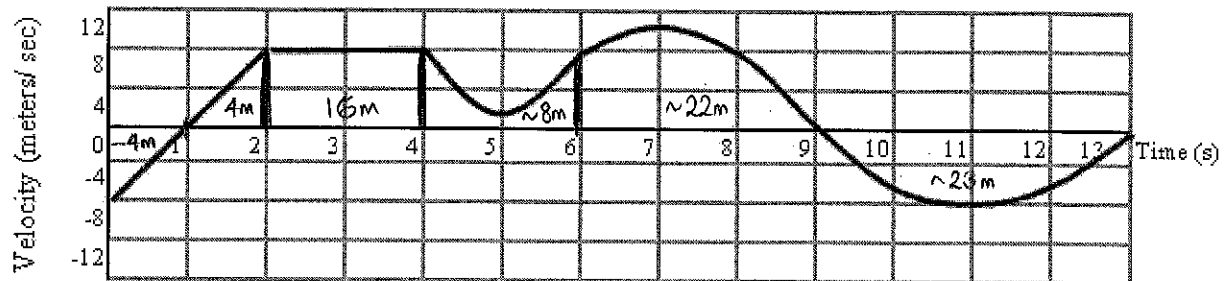
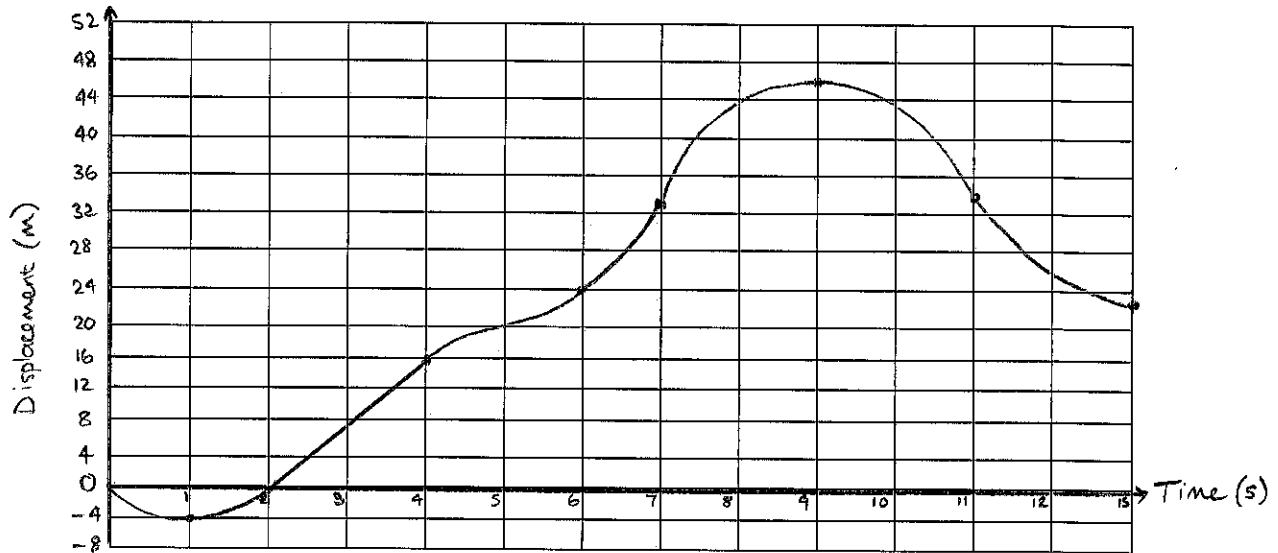
# SOLUTIONS

**Physics**  
Kinematics Graphs

## #2

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Period: \_\_\_\_\_

Based on the Velocity-Time Graph below, create a Displacement-Time Graph, including proper axes, below. You will have to determine the appropriate scale intervals for the independent and dependent axes.



1. Based on the graph above, at or between what time(s) do the quantities listed below occur? For example, "2 s to 6 s" or "at 5 s, 7 s, and 9 s." Be sure to include *all* the times that these occur.

- a. positive velocity    1s to 9s
- b. negative velocity    0s to 1s    &    9s to 13s
- c. maximum positive velocity    7s
- d. maximum negative velocity    0s    &    11s
- e. maximum total displacement in the negative direction    1s
- f. maximum total displacement in the positive direction    9s

↓ continue on the back

g. positive acceleration 0s to 2s, 5s to 7s, 11s to 13s.

h. negative acceleration 4s to 5s, 7s to 11s.

i. maximum positive acceleration 0s to 2s & 6s

j. maximum negative acceleration 4s

k. constant velocity 2s to 4s

l. constant acceleration 0s to 2s

m. zero velocity 1s & 9s & 13s.

n. zero acceleration 2s to 4s.

2. What is the acceleration between 0 and 2 seconds? *How* did you find it?  $8 \text{ ms}^{-1} \div 1 \text{ s} = 8 \text{ ms}^{-2}$

3. What is the displacement at the end of 4 seconds? *How* did you find it?  $-4 \text{ m} + 4 \text{ m} + 16 \text{ m} = 16 \text{ m}$ .

4. a. What distance was covered during the time between 3 and 4 seconds? *How* did you find it?  $1 \text{ s} \times 8 \text{ ms}^{-1} = 8 \text{ m}$

b. Was the motion forward or backward during this time? *How* do you know? Forwards  $\rightarrow$  positive velocity.

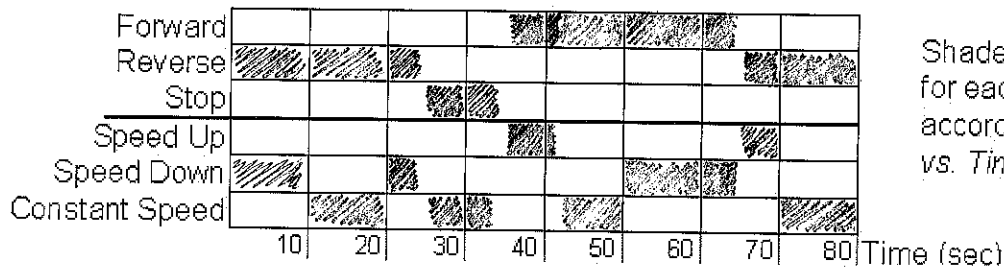
5. Describe this object's motion during the entire time period, you can use common language like, "it slowed down," or "it made a U-Turn."

- \* Moved backwards, decelerating, stopped instantaneously, then moved forwards, accelerating up to time = 2s.
- \* From 2s to 4s not accelerating, moving forwards at constant speed.
- \* At 4s, decelerated for 1s, but didn't stop, then accelerated again for 2s.
- \* At 7s reached max velocity, then started decelerating until stopped at 9s.
- \* Then moved backwards for rest of motion, speeding up backwards for 2s then slowing back down to a rest at 13s.

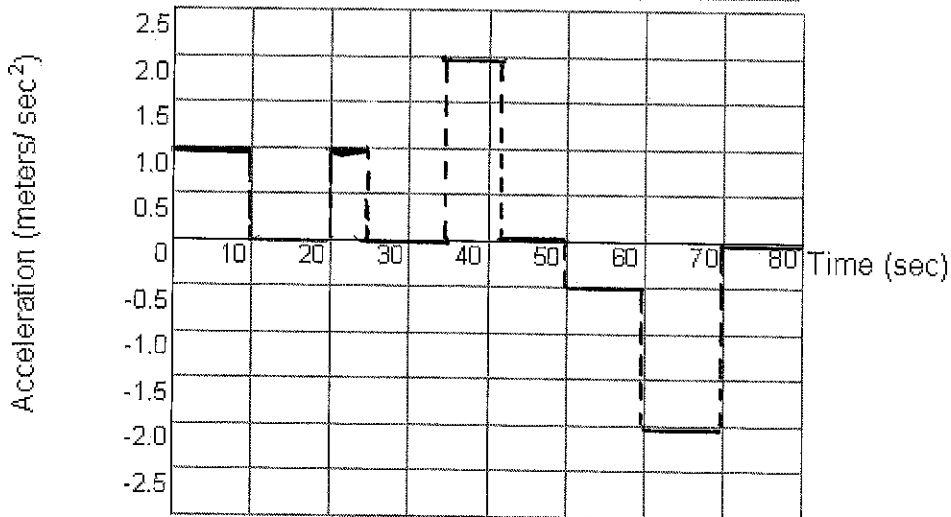
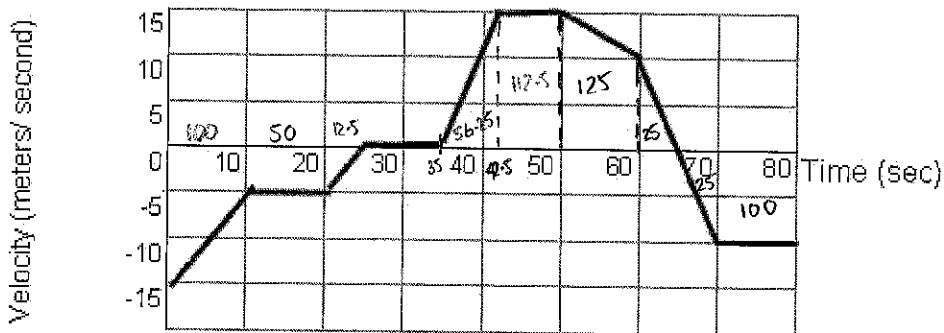
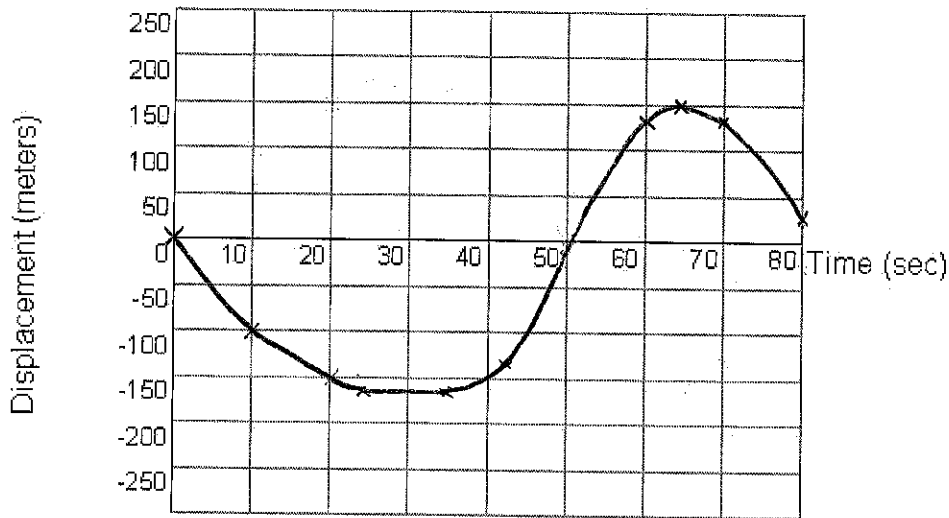
**Physics**  
Kinematics Graphs

#3

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Period: \_\_\_\_\_



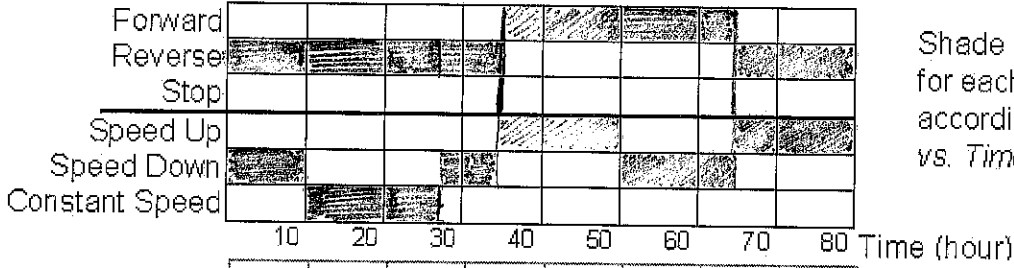
Shade areas which apply for each time segment, according to the *Velocity vs. Time Graph*.



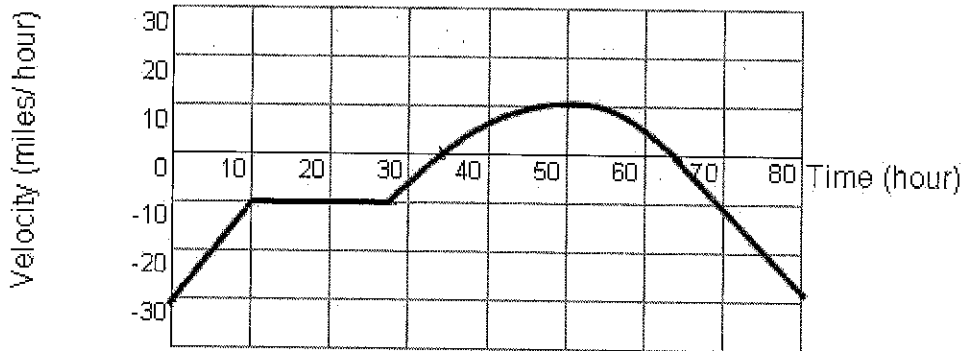
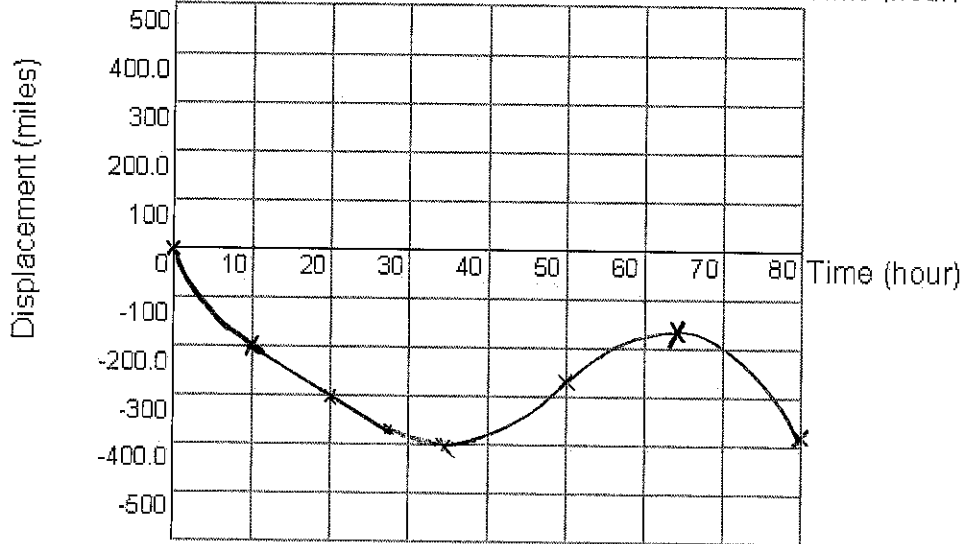
Physics  
Kinematics Graphs

#4

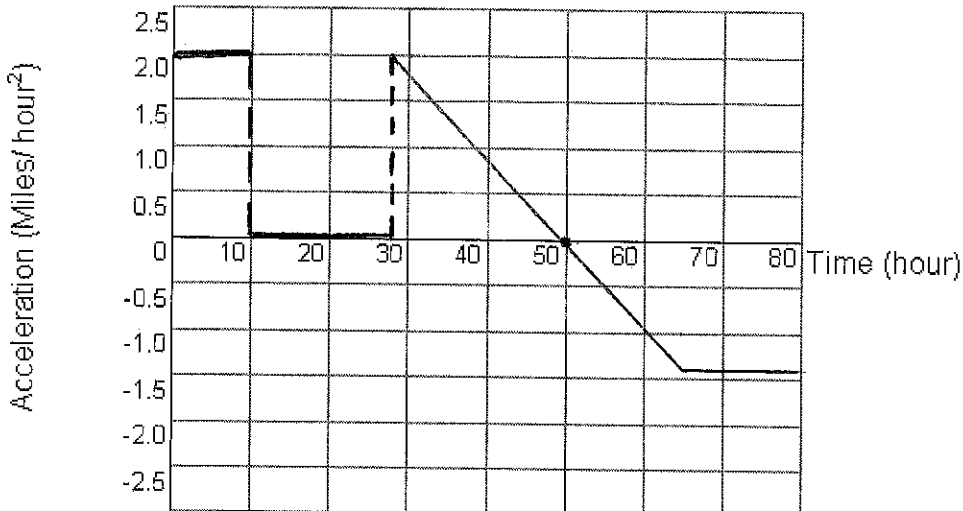
Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Period: \_\_\_\_\_

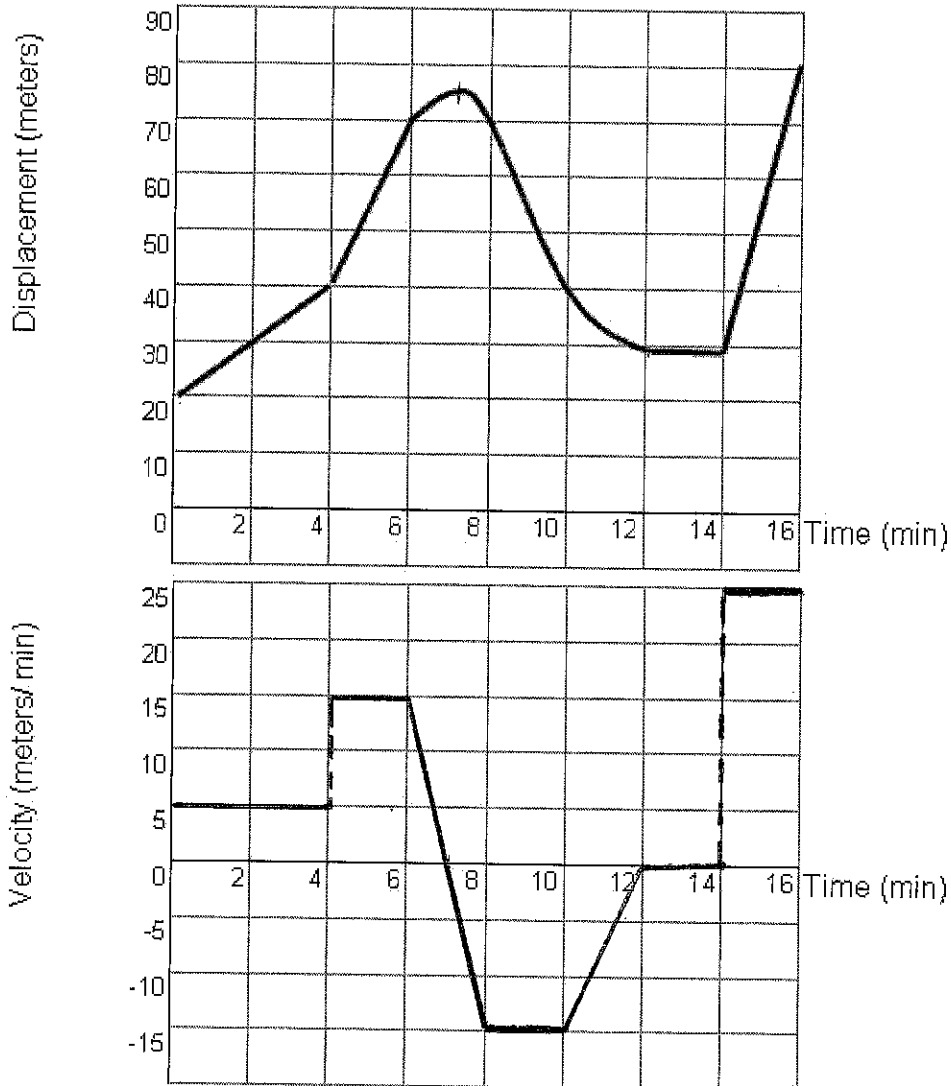


Shade areas which apply for each time segment, according to the *Velocity vs. Time Graph*.

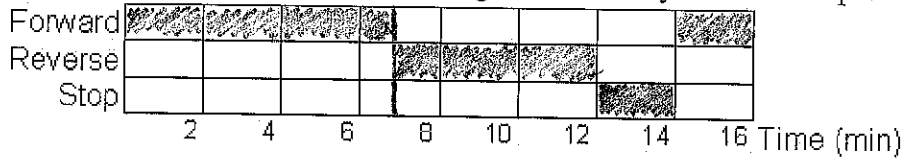


$\frac{5}{2} = 2.5 \text{ mph}^2$





1. Shade areas which apply for each time segment, according to the Velocity vs. Time Graph.



2. Based on the graphs above, at or between what time(s) do the quantities listed below occur?

a. maximum positive velocity 14m - 16m

c. constant velocity 0m - 4m & 4m - 6m & 8m - 10m & 12m - 14m & 14m - 16m

b. maximum negative velocity 8m - 10m

d. zero velocity At 7m (instantaneously) & 12m - 14m

3. a. What distance was covered during the time between 2 and 4 minutes? 10 metres.

b. was that motion forward or backward during this time? Forwards

4. What is the acceleration between 8 and 10 minutes? Zero → constant velocity.