Kinematic Graphing - Mathematical Analysis
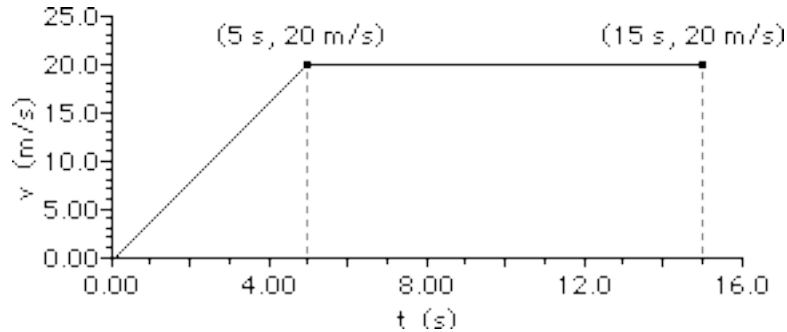
Study **Lessons 3 and 4** of the **1-D Kinematics** chapter at **The Physics Classroom**:

http://www.physicsclassroom.com/Class/1DKin/1DKinTOC.html

1. Consider the following graph of a car in motion. Use the graph to answer the questions.

a. Describe the motion of the car during each of the two parts of its motion.

0-5 s: _____

5-15 s: _____

b. Construct a *dot diagram* for the car's motion.

c. Determine the acceleration of the car during each of the two parts of its motion.
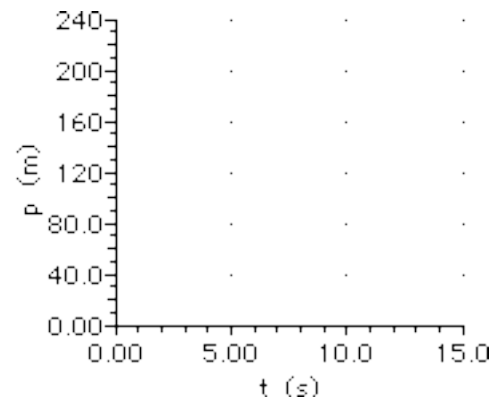
<u>0-5 s</u>   <u>5-15 s</u>

d. Determine the displacement of the car during each of the two parts of its motion.

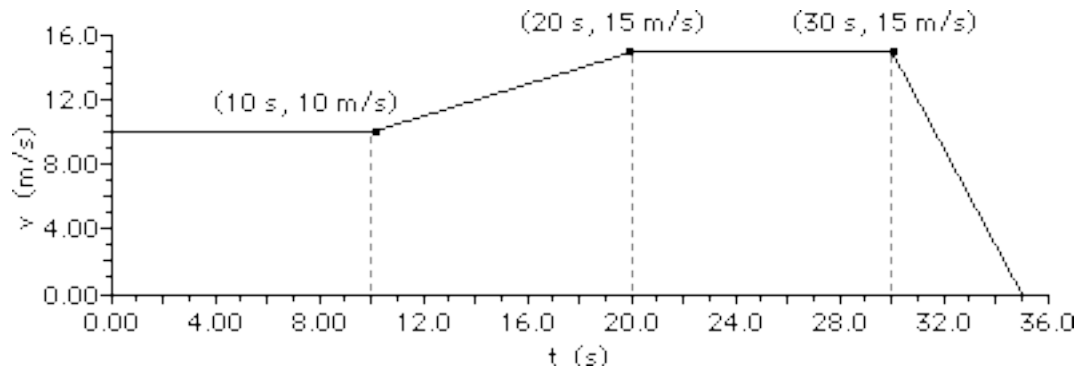<u>0-5 s</u>   <u>5-15 s</u>

e. Fill in the table and sketch position-time for this car's motion. Give particular attention to how you connect coordinate points on the graphs (curves vs. horizontals vs. diagonals).

Time (s)	Pos'n (m)
0	0
5	
10	
15	

1-D Kinematics

2. Consider the following graph of a car in motion. Use the graph to answer the questions.

(20 s, 15 m/s)   (30 s, 15 m/s)

(10 s, 10 m/s)

a. Describe the motion of the car during each of the four parts of its motion.

0-10 s: _____

10-20 s: _____

20-30 s: _____

30-35 s: _____

b. Construct a *dot diagram* for the car's motion.

c. Determine the acceleration of the car during each of the four parts of its motion. **PSYW**

<u>0-10 s</u>   <u>10-20 s</u>   <u>20-30 s</u>   <u>30-35 s</u>

d. Determine the displacement of the car during each of the four parts of its motion. **PSYW**

<u>0-10 s</u>   <u>10-20 s</u>   <u>20-30 s</u>   <u>30-35 s</u>

e. Fill in the table and sketch position-time for this car's motion. Give particular attention to how you connect coordinate points on the graphs (curves vs. horizontals vs. diagonals).

Time (s)	Pos'n (m)
0	0
5	
10	
15	
20	
25	
30	
35	