

## Constant Velocity Review

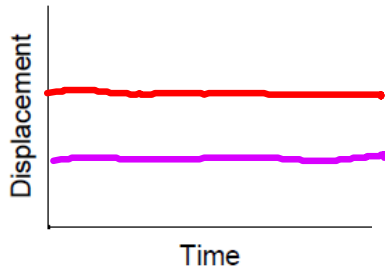
Name \_\_\_\_\_

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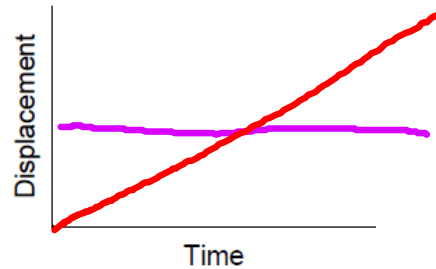
In each of the following cases there are two objects in motion, **object A** and **object B**. Construct a displacement time Graph for each of the scenarios listed below.

Note: All objects start at the origin unless noted otherwise

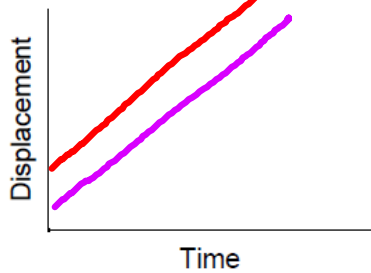
1. Neither object A or B are moving, however B is ahead of A.



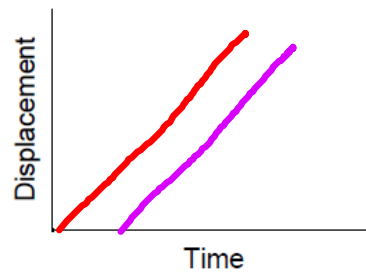
2. A is not moving but starts ahead of B while B starts at the origin and moves at a constant speed.



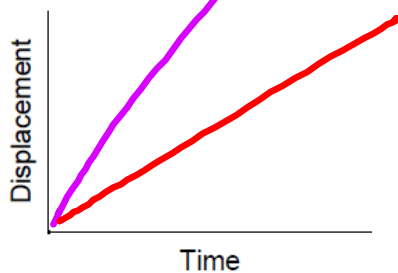
3. A and B are traveling the same speed however B starts ahead of A.



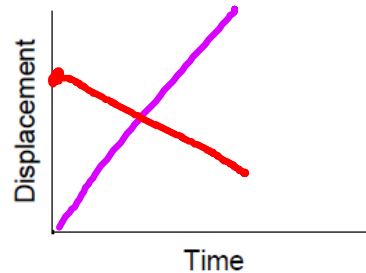
4. A and B are traveling the same speed, however A starts at a later time than B



5. A is traveling faster than B and both start at the same location.



6. A starts at the origin moving at a constant speed & B starts ahead of A and moves toward A at a slower speed.



7. A jogger runs 200. m in 50 seconds then runs 600. m in 120. seconds and finally sprints 200. m in 20 seconds. What is the jogger's average speed?

Show all work to receive full credit

$$\text{AVERAGE Speed} = \frac{\text{Total dist}}{\text{Total Time}}$$

$$S = \frac{200 + 600 + 200}{50 + 120 + 20} = \frac{1000}{190} = 5.26 \text{ m/s}$$

$$d = V_{avg} \cdot t$$

8. An automobile travels 30 mi/hr for half an hour then 65 mi/hr for one hour.  
Show all work to receive full credit

a) How far did the car travel?

$$d = v \cdot t$$

$$d = 30(0.5) = 15$$

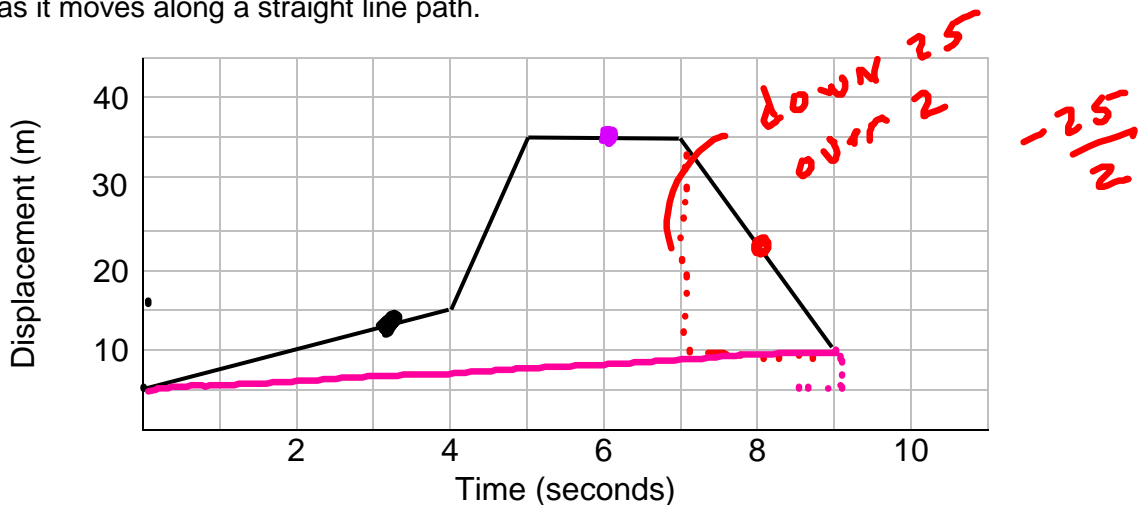
$$d = 65(1) = 65$$

$$\underline{80 \text{ miles}}$$

- b) What is the automobile's average speed?

$$S = \frac{\text{Total Dist}}{\text{Total Time}} = \frac{80}{1.5} = 53.3 \text{ mph}$$

- 9) Answer the following using the displacement time graph below representing an object's position as it moves along a straight line path.



- a. What is the velocity of the object at 3.1 seconds?

Show all work to receive full credit

Slope of the Line Between 0-4 Seconds

$$\Delta d / \Delta t = (15 - 5) / 4 = 2.5 \text{ m/s}$$

- b. What is the velocity of the object at 6 seconds? How do you know?

Slope From 5-7 Sec

$$\text{Slope} = 0 \quad V = 0$$

- c. What is the velocity at 8 seconds?

Slope from 7-9 Sec

$$\frac{\Delta d}{\Delta t} = \frac{10 - 35}{9 - 7} = -12.5 \text{ m/s}$$

- d. What is the speed at 9 seconds?

$$12.5 \text{ m/s}$$

- e. What is the average velocity between 0 and 9 seconds?

$$\frac{\Delta d}{\Delta t} = \frac{10 - 5}{9 - 0} = 0.556 \text{ m/s}$$

$$d = V_{avg} \cdot t$$

### Graphing and Data analysis:

Be able to define and identify the following:

a) Independent Variable:

Variable Changed By Investigator

b) Dependent Variable

Variable measured Based on changes in the Independent Variable

c) Control Variables.

things we keep constant.

**SpongeBob and his Bikini Bottom pals have been busy doing a little research. Read the description for each experiment and answer the questions.**

**1. Microwave Miracle** Patrick believes that fish that eat food exposed to microwaves will become smarter and would be able to swim through a maze faster. He decides to perform an experiment by placing fish food in a microwave for 20 seconds. He has the fish swim through a maze and records the time it takes for each one to make it to the end. He feeds the special food to 10 fish and gives regular food to 10 others. After 1 week, he has the fish swim through the maze again and records the times for each.

a) What was Patrick's hypothesis?

microwaved food makes fish smarter

b) What is the independent variable?

Food

c) What is the dependent variable?

Time to travel through the maze

d) What are the control variables?

MAZE  
Food source  
Amount of food

$y = 2x$