

Today we begin real physics!  
But what is physics?  
Physics is the study of:

\_\_\_\_\_ and \_\_\_\_\_!  
Last time, you copied many  
words into your notes:  
They came in pairs: vector and  
scalar versions

\_\_\_\_\_ was scalar,  
\_\_\_\_\_ vector  
\_\_\_\_\_ scalar,  
\_\_\_\_\_ vector

The scalar numbers are  
concerned only with the  
magnitude of the number  
Vector numbers have both a

\_\_\_\_\_ and a  
\_\_\_\_\_.

I walk 15 steps forward...  
What is my distance?

My displacement?

(Continuing my trip...)  
I turn around and walk 10 steps  
back...  
What is my total distance  
traveled?

What is my displacement?

### **WORKING WITH WORD PROBLEMS...**

The most important trick is to  
read the unit!

That's the little letters that appear after  
the numbers! (they tell you stuff!)

14.3 m/s

12 days

How about m/s and m, km???

These may have been new to you.  
m, km, cm, and the like are all  
forms of the unit meter, which

is a distance or \_\_\_\_\_  
unit.

m/s or km/hr are both units of  
speed or \_\_\_\_\_

You MUST associate these in  
your mind!

### **Today's lesson involves accelerations!**

An acceleration is a change in

\_\_\_\_\_ . Any change.

When the speed gets faster, we  
call it a (+) acceleration.

When it gets slower, we call it  
a (-) acceleration.

Make sure (-) numbers are  
plugged in as such!

To calculate the acceleration,  
we need to find the slope of  
the line.

Formula(s):

Clari was driving at 14.3 m/s when she notices the nice officer. 3.27 seconds later, she is driving a respectable 9.71 m/s. What was her acceleration?

We know:

Clearly the formula to use is:

$$a = (v_f - v_i) / t$$

Plugging in we get:  $(9.71 - 14.3) \div 3.27 =$

\_\_\_\_\_ which we round to:

\_\_\_\_\_, but what is our unit? The unit to learn that always goes with acceleration is:  $m/s \div s = m/ss$

or...  $m/s^2$

Erika was driving at 12.93 m/s when a cat jumps out in front of her. She slams on the brakes at a  $19.8 m/s^2$  rate and skids to a stop. How long was she braking?

We know:

We'll use the same formula:

$$a = (v_f - v_i) / t$$

But we'll algebra for t, which flips the a and t around to get:

$$t = (v_f - v_i) / a$$

Plugging in we get:  $(0 - 12.93) \div -19.8 =$

\_\_\_\_\_ or

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For homework:  
do Pbs B!