

# Unit 2 Study Guide Part 1

Name: Key

## Linear Motion:

1.) List 2 examples of scalar measurements.

speed, distance, time

2.) List 2 examples of vector measurements.

Velocity, displacement, acceleration

3.) Give an example of a magnitude.

100, 50, 75

4.) Josh walked 4 meters north, 10 meters south, then 8 meters north.

a. What is Josh's total distance? 22 m

b. What is Josh's displacement? 2 m N

5.) Amber biked 18 meters west, then she swam 4 meters west, then ran 22 meters east.

a. What is Amber's total distance? 44 m

b. What is Amber's displacement? 0 m

6.) What is distance measured in? m

7.) What is displacement measured in? m

8.) What is time measured in? s

9.) What is speed measured in? m/s

10.) What is velocity measured in? m/s

11.) Use this formula:  $s = d/t$

A car moves 98 meters in 12 seconds. How fast is the car traveling?

$$s = \frac{d}{t} \quad s = \frac{98\text{m}}{12\text{s}} = 8.16\text{m/s}$$

12.) Use this formula:  $d = st$

A car is traveling at a speed of 13 m/s for 180 seconds. How far did the car travel?

$$d = st \quad d = (13\text{m/s})(180\text{s})$$
$$d = 2340\text{m}$$

13.) Use this formula:  $t = d/v$

A car traveled north at velocity of 43 m/s and had a displacement of 125 meters. How long was the car on the road?

$$t = \frac{d}{v} \quad t = \frac{125m}{43m/s} = \boxed{2.91s}$$

14.) Acceleration is the rate of change of velocity over a certain amount of time.

15.) What is acceleration measured in?  $m/s^2$

16.) Use this formula:  $a = v_f - v_i / t$

A car is driving at an initial velocity of 13 m/s and speeds up to a final velocity of 38 m/s over 4 seconds. What is the acceleration of the car during that time period?

$$a = \frac{v_f - v_i}{t} \quad a = \frac{38m/s - 13m/s}{4s} \quad a = 6.25m/s^2$$

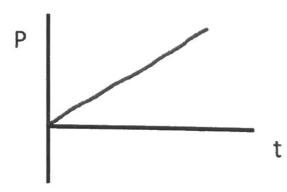
17.) Use this formula:  $v_f = v_i + at$

A car is stopped at a red light and then accelerates at a rate of 25 m/s<sup>2</sup> for 3 seconds. What is the final velocity of the car?

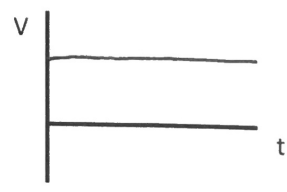
$$\begin{aligned} v_i &= 0m/s \\ a &= 25m/s^2 \\ t &= 3s \\ v_f &= ? \end{aligned}$$

$$\begin{aligned} v_f &= v_i + at \\ v_f &= 0m/s + (25m/s^2)(3s) \\ &= \boxed{75m/s} \end{aligned}$$

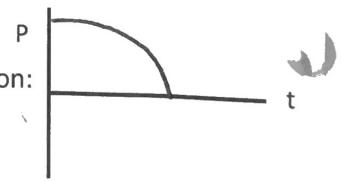
18.) Draw a position- time graph that shows constant positive velocity:



19.) Draw a velocity- time graph that shows constant positive acceleration:



20.) Draw a position- time graph that shows increasing velocity in the negative direction:



is  
ect  
End Period