Review Unit 1 Answers

Name_____ Date_____ Period_____

My student studied for 30 minutes in preparation for this test. _____
(Parent Signature)

1) What are the two measurements necessary for calculating average speed? Velocity? Acceleration?

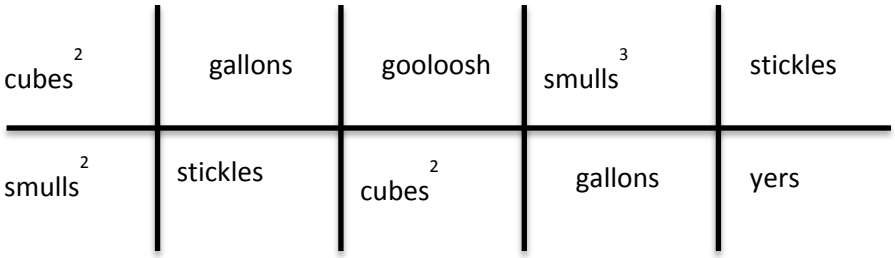
Speed: Distance and time Velocity: Displacement and time Acceleration: Velocity and time

2) If I have the following equation, $V = \frac{D}{t}$ what units will my answer be in? Give an example.
A displacement (distance) and time km/yr

3) A horse gallops a distance of 30 kilometers in a time of 15 minutes. Its average speed is in km/hr?
120 km/hr 30km/.25hr=120km/hr (you have to convert 15 minutes into hours)

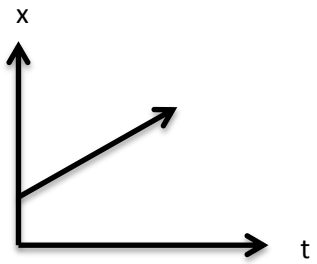
4) A train maintains a constant velocity of 121 mi/hr for 10 seconds. During this interval its acceleration is
0 or zero. If you have a constant velocity then the acceleration will always be zero, you only have an acceleration if the velocity is changing. A constant velocity means it is not changing, hence no acceleration.

5) What units are you left with?



After cancelling, we have (gooloosh)(smulls)/yers

6) What information can you get off of this graph? (equations, slope, object, motion, etc.)



You can gather that the object is moving, and moving at a constant speed. You also know that it is moving away from the starting point as the slope is positive. If I were to give actual numbers on the graph you could pull an equation of y=mx+b.

7) What is the difference between distance and displacement?
Distance is how far you have traveled and displacement is how far you are from the starting point.

8) What is the difference between speed and velocity?

Speed is distance/time and velocity is displacement/time

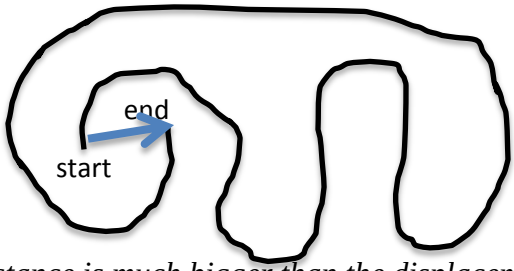
9) Define scalar. What are some examples of scalar quantities?
Scalar is just how big something is (magnitude)

Distance, speed, time

10) Define vector. What are some examples of vector quantities?

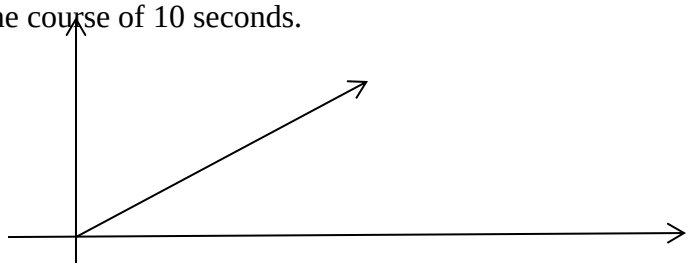
Vector tells us the magnitude and the direction. *Displacement, velocity, acceleration*

11) What can you tell about the following picture in terms of distance and displacement? Draw a line where you would measure the displacement.



The distance is much bigger than the displacement because distance cares about the path taken while displacement does not. The displacement is indicated by the arrow.

12) Draw a position vs. time graph for the following: A zebra prances in a straight line for 32 meters over the course of 10 seconds.



13) What does the slope of a velocity vs. time graph represent?
acceleration

14) The change in an objects position is called what?
Velocity or speed

15) The change in an objects speed is called what?
acceleration

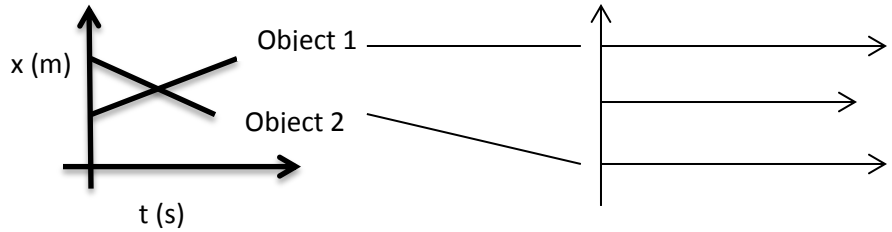
16) The change in an objects velocity is called what?
Acceleration

17) A train that has a negative velocity is doing what?
Traveling in the opposite direction of the stated positive direction

18) A plane that has a positive velocity is doing what?
Traveling in the same direction of the stated positive direction

19) An elephant that has a negative acceleration is doing what?
Accelerating in the opposite direction of the stated positive direction

20) Describe, using a clear complete sentence, how the motion of object 2 differs from the motion of object 1. **Explain how you know**. Then draw the velocity vs. time graph for each object on the same graph.



Object 1 is traveling away from the starting point at a constant speed while object 2 is traveling back to the starting point at a constant speed.

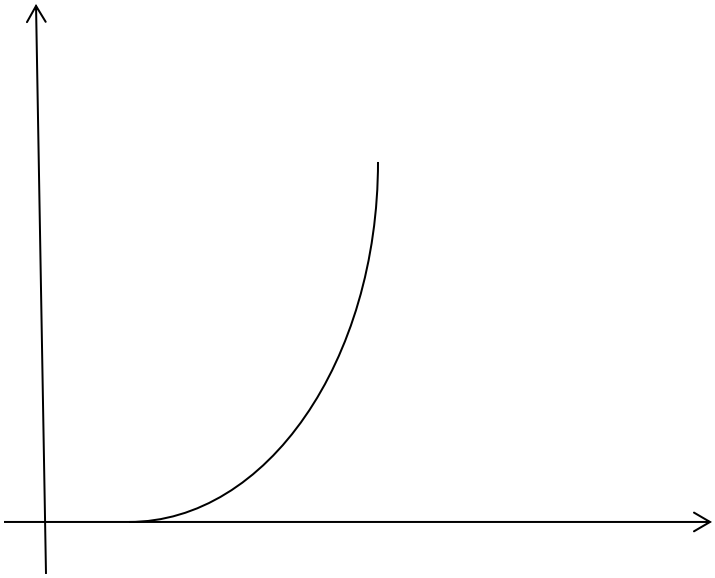
21) Given the data, find the average velocity.

Position (m)	Time (s)
20	1
15	3
10	5
5	7

-2.5m/s *15m-20m/3s-1s=-2.5m/s*

22) Given the data, complete the following: Graph the data in a position vs. time graph. Find the acceleration. What was the velocity when the train had traveled 20.25 meters? If the car continues to accelerate what will be the velocity after 15 seconds.

Time (s)	Position (m)
0	0
0.5	0.25
1	1
1.5	2.25
2	4
2.5	6.25
3	9
3.5	12.25
4	16
4.5	20.25
5	25



Your graph should look similar to this. To find the acceleration first you must know the initial and final velocities. Since Velocity=displacement/time we know the initial velocity is 0m/s because the first time and first distance are both 0. Next we can figure out the final velocity by doing 25m/5s = 5m/s. I just used the last points in the chart to find that. Now we can solve for the acceleration using the formula a=(vf-vi)/t. A=(5m/s-0m/s)/5seconds a=1m/s/s The velocity when the train had traveled 20.25 meters can be solved using the equation v=D/t v=20.25m/4.5seonds v=4.5m/s Now if the car continues then the velocity can be solved using the equation at+vi=vf (1m/s/s)(15s)+0m/s=15m/s

23) If a rocket initially at rest accelerates at a rate of 50 m/s^2 for one minute, its speed will be

At+vi=vf (50m/s^2)(60sec)+0m/s=3000m/s I have to convert the minutes into seconds and I start at rest so I know that my initial velocity is 0.

24) If a car accelerates from rest at 2 meters per second per second, its speed 3 seconds later will be about
At+vi=vf (2m/s/s)(3sec)+0m/s=6m/s

25) If a drag racer wins the final round of her race by going an average speed of 210.37 miles per hour in 6.249 seconds, what distance did she cover?

s=d/t d=st (210.37mi/hr)(.001736hr)=.37 miles You have to have the same time so you need to either convert seconds into hours or mi/hr into mi/sec. I changed seconds into hours.

26) A cheetah is running with a uniform speed of 89 km/hr along a straightaway. What is the time it takes for the cheetah to cover 710 meters?
t=d/s (710m)/(89000m/hr)=.008 hrs Because the distances do not match up you need to either convert km/hr into m/hr or m into km. I chose to convert km/hr into m/hr.

27) If an auto is moving in a straight line at constant speed, what is its acceleration?
0 or zero. If you have a constant velocity then the acceleration will always be zero, you only have an acceleration if the velocity is changing. A constant velocity means it is not changing, hence no acceleration.

28) Graph the following in a position vs. time graph. Jimmy is driving his racecar home and starts by going with a constant velocity of 3.0 m/s east. After 2.0 s, he stops for gas for 5.0 s. He then drives west 5.0 m in 3.0 s. Jimmy continues in the same direction but increases his speed to 4.0 m/s for 3 s. (you can do this on the back side)