Physical Science Chapter 2 Review II

Name: Key

1. What is speed? (L1)

The distance an object travels per unit of time

2. What is velocity? (state the difference between speed and velocity)

The speed of an object plus its direction
magnitude & direction

3. Give an example of something that measures instantaneous speed. (L2)

Car Speedometer
GPS activity Tracker

4. Calculate the speed of an airplane traveling 3,000 km in 3.45 h. (L2)

Given:
$V = ?$
$D = 3000\,km$
$t = 3.45\,hr$

Soln: $V = \frac{D}{T}$

$= \frac{3000\,km}{3.45\,hr}$

$V = 869.6\,km/hr$

5. How far does a butterfly travel if it flies with a speed of 0.3 m/s and flies for ~~1 h~~ 50 secs? (L3)

Given:
$D = ?$
$V = 0.3\,m/s$
$t = 50\,sec$

Soln: $V = \frac{D}{T}$

$D = V \cdot T$

$= (0.3\,m/s)(50\,sec)$

$D = 15\,m$

6. A car travels with a speed of 24 m/s for ~~3 hours~~ 1100secs. How many m does it travel? (L3)

Given:
$V = 24\,m/s$
$t = 1100\,secs$
$D = ?$

Soln: $V = \frac{D}{T}$

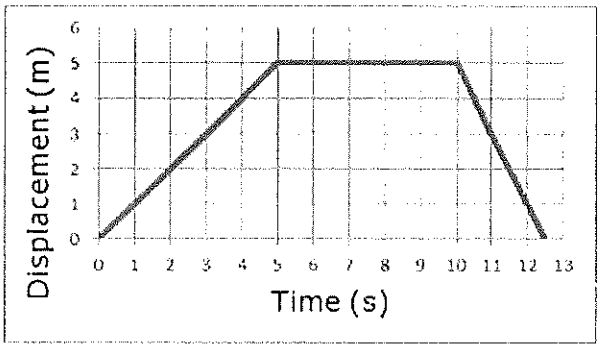
$D = V \cdot T$

$= (24\,m/s)(1100\,sec)$

$D = 26400\,m$

7. Explain how it is possible for your speed to stay the same but your velocity to change. (L3)

Your direction must change.
Speed is just magnitude
But Velocity is magnitude & direction



$\Delta X = 5m - 0m = 5m$

$\Delta t = 5sec - 0s = 5sec$

$V = \frac{D}{T} = \frac{5m}{5sec} = 1m/s$

8. Explain the motion between 0-5 seconds *Be specific (L3)

object is moving away from the starting point at a Rate of 1m/s

9. Explain the motion between 5-10 seconds. *Be specific (L3)

object is <u>Not</u> moving. No change in Distance (Displacement)

10. Explain the motion between 10-12.5 seconds. *Be specific (L3)

$\Delta t = 12.5s - 10sec = 2.5s$

$\Delta X = 0 - 5m = -5m$

$V = \frac{D}{T} = \frac{-5m}{2.5s}$

$V = -2m/s$

object is moving closer (0, starting point) to where it started at a Rate of -2m/s

11. What is acceleration? (L1)

The Rate of Change of Velocity

12. What do you need know about an object to describe its velocity? (L1)

The object's speed & Direction

13. Describe the three ways that an object can show acceleration. (L3)

(1) Speed up - Acceleration
(2) Slow down - Deacceleration
(3) Change direction

14. When does an object show positive acceleration? (L2)

When it speeds up

15. When does an object show negative acceleration? (L2)

When it slows down

16. On an acceleration graph, what does a horizontal line tell you about the object? (L3)

No acceleration, constant speed

17. Calculate the acceleration of a fish that accelerates from 0.5 m/s to 1.3 m/s in 80 s. (L3)

Given:
$a = ?$
$V_i = 0.5 m/s$
$V_f = 1.3 m/s$
$\Delta t = 80 s$

Soln: $a = \frac{V_f - V_i}{\Delta t}$

$= \frac{1.3 m/s - 0.5 m/s}{80 s}$

$a = 0.01 m/s^2$

19. A skier accelerates down a mountain with an acceleration of 1.2 m/s^2. If it takes them 130 s to reach the bottom of the mountain and they started from rest, what velocity does the skier reach? (L3)

Given:
$a = 1.2 m/s^2$
$\Delta t = 130 s$
$V_i = 0$ (Rest)
$V_f = ?$

Soln: $a = \frac{V_f - V_i}{\Delta t}$ ($V_i = 0$)

$a = \frac{V_f}{\Delta t}$

$V_f = a \cdot \Delta t$

$V_f = (1.2 m/s^2)(130 s)$

$V_f = 156 m/s$

20. Suppose velocity is measure in kilometers/hour and time is measure in hours. What is the unit of acceleration?

$a = \frac{\Delta V}{\Delta t} = \frac{Km/hr}{hr}$

$a = Km/hr^2$

21. What is the formula used to calculate the speed of an object?

Velocity (speed) $= \frac{Distance}{time}$