Picturing Motion / Where & When? (p. 31 – 37)

I. All Kinds Of Motion

p.32

1. **What causes an object to be in motion?**

   A change in position.

2. **What two factors are used to describe motion?**

   1. _Place (where)_   2. _Time (when)_

   60 miles/hr → *where?*

II. Motion Diagrams

1. **One way that motion can be determined is by relating the position of the object to the**

   background **over equal time intervals.**   *p.32 Bottom*

   Lady that visually interprets stimuli every 5 sec

2. **Define the term motion diagram.**

   p.33

   Motion Diagram – _series of images showing the positions of a moving object at equal time intervals_

III. The Particle Model

1. **Define the term particle model.**

   p.33

   Particle Model – _simplified version of a motion diagram in which the object in motion is replaced by a series of single points._

2. **Which statement is <u>false</u> concerning a particle model?**

   a. To use a particle model, the object size must be much less than the distance it moves.
   b. The internal motions of the object are ignored.
   c. A dot represents the central point of the object in a particle model.
   d. A particle model produces a ~~more complex~~ *simpler* version of a motion diagram.

IV. Coordinate Systems

1. **Match the following terms with the correct definitions.**

   1. _C._ - Coordinate System   A. Point at which both variables have the value zero.

   2. _A._ - Origin   B. Separation between an object and the origin.

   3. _B._ - Position   C. System that identifies zero point and direction variables.

   4. _D._ - Distance   D. Describes how far an object is from the origin.

2. **What are two quantities that an arrow can indicate on a motion diagram?**

   1. _The position of the object._ (Current location)

   2. _How far the object is from the origin._ (Distance)

3. A negative position on a motion diagram would be indicated by motion to the ~~right~~. *left*

Circle One :   True   (False)   (p. 35) Top

4. Match the following terms with the correct definition.

1. _D._ - Magnitude   A. Quantities that possess both magnitude and direction.

2. _A._ - Vectors   B. Quantities that are just numbers without any direction.

3. _B._ - Scalars   C. Vector that results from the sum of two other vectors.

(p. 35) 4. _C._ - Resultant   D. A measure of size.

5. List two examples of a vector and a scalar.

Vector   1. _Position (Displacement)_ 2. _Velocity_

Scalar   1. _Temperature_   2. _Distance_

6. The resultant always points from the tail of the first vector to the tip of the last vector.

Circle One :   (True)   False   *(See below!)*

V. Time Intervals & Displacement

1. Define the term time interval.

(p. 36) Top   Time Interval – *difference between two times*   *Start + stop race.*

2. Write out the formula to determine Δt.

$\Delta t =$ $(t_f - t_i)$

3. Define the term displacement.   *(Distance Vs. Displacement DEMO)*

(p. 36) Top   Displacement – *vector representing a change in position*

4. Write out the formula to determine Δd.   *Start + stop in a relay race.*

$\Delta d =$ $(d_f - d_i)$

5. How do you subtract vectors?   (p. 36) Bottom

Reverse the subtracted vector and add.

6. A displacement vector is always drawn with the tail at the earlier position and point at the later position.

Circle One :   (True)   False