

## 8<sup>th</sup> Grade Science

### Motion & Energy Test Review

#### Ch. 9; Section 1; Describing Motion

1. What is position defined by? What are sets of reference points and reference directions?
2. Know what a reference point is and how it relates to motion, speed, & velocity.
3. Know that to say an object is in motion depends on the reference point you relate it to.
4. What is motion and how is it defined? How do you know it when you see it?
5. Know what distance is and what SI units might define it. Know how it differs from displacement.
6. Know what displacement is and how to recognize it in a diagram.
7. Be able to define a vector and the two quantities it involves.
8. Be able to draw a vector diagram, as for a pool ball or the accelerometer you built in class.
9. \*Write an essay describing the motion of Mr. Thompson to the Snack Shack at 8am using the underlined vocabulary above.

#### Ch. 9; Section 2; Speed and Velocity

1. Know the circle diagrams for speed, velocity, and acceleration.
2. Know how to solve word problems involving speed and velocity.
3. Know all the steps in showing your work to solve speed/velocity word problems.
4. What is speed? What does its graph look like? How is it calculated? What two other things do you need to know to find speed? What are some possible SI units of speed?
5. What is average speed? How two ways is it calculated? What does its graph look like?
6. What is instantaneous speed?
7. What is velocity and how is it calculated? How is it different from speed?
8. What are two things that a change in velocity might be due to?
9. Know that the slope of a line on a d-t graph is equal to the speed of an object.
10. Be able to recognize slow and fast speed from the slopes of lines on a graph.
11. Know how to interpret speed & velocity diagrams.
12. \*Write an essay that describes the motion of Miriam Montion toward a 2lb bag of M & M's using the underlined vocabulary words above.

#### Ch. 9; Section 3; Acceleration

1. Know what acceleration is. Know how to calculate it. Know how it changes with changing speed or direction. Know initial and final velocity are used to calculate acceleration.
2. Know how to interpret acceleration-deceleration diagrams.
3. Know what  $M/S^2$  means in words; know how to solve word problems involving acceleration.
4. Know how to recognize acceleration and deceleration from smile-frown graphs.
5. Know that the slope of a speed-time (s-t) graph can be used to calculate constant acceleration.
6. Know that a curved distance-time (d-t) graph indicates an object is accelerating.
7. Know all the steps in showing your work to solve acceleration word problems.

#### Ch. 9; Section 4; Energy

1. Define Work
2. Define Energy
3. What are the four types of energy discussed in the section?
4. What is kinetic energy?
5. On what two parameters does kinetic energy depend?
6. What is the formula for determining the kinetic energy of a moving object? -----over-----→

7. What does “squared” mean in math; what is the mathematical operation involved?
8. What is the SI unit for both work and energy and what are its units?
9. What is gravitational potential energy?
10. On what two things does gravitational potential energy depend?
11. What is a “newton” a measure of; what is it? What are its several units?
12. What is elastic potential energy?
13. What is mechanical energy?
14. Be able to interpret a diagram showing mechanical energy.
15. Be able to interpret a pendulum diagram for gravitational and kinetic energy.
16. What does the Law of Conservation of Energy state?
17. \*Write an essay describing the following situation using the underlined vocabulary words above:  
Mr. T. hits a killer mogul on his new pair of skis and catches 25-feet of air before landing safely and continuing down the mountain.