Week 2 Instructions Paper Copy
Physical Science
4/6 - 4/10

Students,

For this week you will be learning about kinetic and potential energy. You will have to define both terms, learn how to use both of their equations, be able to graph both energies and understand how one affects the other. You will also be learning how to find an object's speed/velocity. This knowledge will then be used in the coming weeks as well.

What you need to do:

- Fill out the kinetic/potential energy notes document by using the video/powerpoint given
- Fill out the problems worksheet using the new formulas for kinetic energy, potential energy, speed/velocity

What you need to turn in:

- Both of the documents above need to be completed and turned in on google classroom
    - You can also email me the documents as well

I suggest keeping a copy of the documents for yourself so that you can study them

If you have any questions please email me: kboose@western-reserve.org

Rubric for these assignments:

- Kinetic/Potential Energy Notes = 10 points
    - 10 points if turned in completed on or before due date
    - 5 points if turned in half completed on or before due date (or turned in late)
    - 0 points if never turned in
- Problem Worksheet = 18 points
    - 1 point per question completed, so if you complete all 18 and turn it in on or before due date you get all 18 points
    - If you only complete 10 questions you will get a 10
    - 9 points if turned in late
    - 0 points if never turned in

Kinetic/Potential Energy Notes

Link to the youtube video: https://www.youtube.com/watch?v=IqV5L66EP2E

Define the following words:

Conservation of Energy:

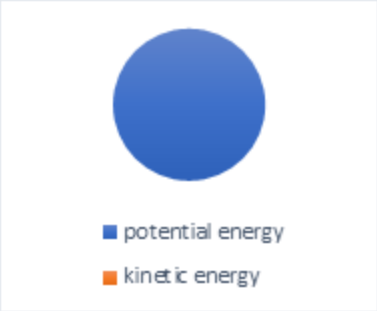
Potential Energy:

Kinetic Energy:

What is the formula for potential energy? Make sure to write out what each variable (letter) represents. IMPORTANT NOTE: we will always use 9.8 for g.

What is the formula for kinetic energy? Make sure to write out what each variable (letter) represents.

In the diagram below of a roller coaster, match the graph to the position on the track. You will be labeling the 4 pie charts and 4 bar graphs with the 4 different positions A,B,C,D from the diagram.



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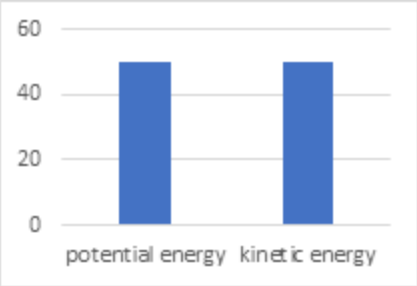

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Speed/Velocity

Link for youtube video: https://www.youtube.com/watch?v=O22zcaELpaA

Define the following terms:

Speed:

Velocity:

What are the formulas for speed and velocity?

What is the difference between speed and velocity?

Problem Worksheet

Kinetic/Potential Energy Problems:

Calculate potential and kinetic energy using their formulas.

1. You have an object that has a mass of 10kg and is moving with a velocity of 25m/s N. What is the KE?

2. There is a book that is at a height of 2m and has a mass of 20kg. What is its PE?

3. What is the potential energy of a 2.5kg rock being held by a boy 6m above the ground?

4. If that rock falls, what will its kinetic energy be just before it hits the ground?

5. If a helicopter (4500kg) hovers 200m above the ground, what is its potential energy?

6. If an airplane (7500kg) is flying with a velocity of 800m/s SE, what is its kinetic energy?

7. A 100kg deer jumps at 20m/s W. What is its KE?

8. A 0.1kg arrow flies at 50m/s NE. What is its kinetic energy?

9. After the arrow hits the ground what will its potential energy be?

10. A kid (75kg) on skis on top of a mountain 1000m high will have how much PE?

Speed/Velocity Problems:

Calculate speed and velocity using their formulas.

1. What is the speed of a car that went a distance of 125 kilometers in 2 hours time?

2. A baseball is thrown a distance of 60 meters. What is its speed if it takes 0.5 seconds to cover the distance?

3. How much time does it take for a bird flying at a speed of 45 kilometers/hour to travel a distance of 1,800 kilometers?

4. A comet is cruising through the Solar System at a speed of 50,000 kilometers per hour for 4 hours time. What is the total distance traveled by the comet during this time?

5. Bob rides his bicycle on a bike path that is 75 kilometers long to get to his house that is east of the bike path. If it takes Bob 15 hours what is his velocity?

6. Jessica jogs on a path that is 25 kilometers long to get to a park that is south of the jogging path. If it takes Jessica 2.5 hours what is her velocity?

7. How much time does it take a person to walk 12 km north at a velocity of 6.5 km/h?

8. If the velocity of a car is 45 km/h west, how far can it travel in 0.5 hours?