Wednesday
January 08 , 2020

Notes – Homework – Turn in the signed documents on or before 01/13

HW -Safety – Scavenger hunt – 01/09

Safety test – 01/10

GSE – SCSH 1-9

Students will explore the various aspects of characteristics of science such as safety, scientific method, measurements etc..

Catalyst:(opening)

On a note book sheet of paper answer the following questions. Make sure to write your name, date and Block on the upper right hand corner.

1.What was your favorite part of this break?

2. What are you most excited for this year?

3. In a perfect school, what would the hallways & class rooms look like and sound like?

Topic: Class procedures and expectations

Essential question: How do procedures help us learn better?

Learning Target : By the end of the day, students will be able to:

1.Understand the specific classroom procedures and expectations

2. Understand safe lab practices

And answer a question like this:

A scientist has extra hydrochloric acid. To dispose of the hydrochloric acid he should.

A. Pour it in the sink and run water after it.

B. Pour it back in the stock container.

C. Throw it away in the container.

D. Dispose of it in the designated waste container.

Agenda

Catalyst- Survey, Info cards	8 min
Who Am I ?	2 min
Syllabus and materials	14 min
Procedures	12 min
Practice it	6 min
Connection	10 mins
Post it Closing 3, 2 ,1	5 min

Thursday
January 09,2020

Notes – Homework – Turn in the signed documents on or before 01/13

HW -Safety – Scavenger hunt – 01/09

Safety test – 01/10

GSE -

GSE :SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST:

1)What is the right procedure for mixing acid and water?

2) What is the first thing to do in case if any thing goes wrong in the lab?

Topic: Introduction to motion

Essential question: Name any three safety equipment's found in a lab.

LEARNING TARGETS: I can....

1. Demonstrate safe practices in a lab environment

2.Define the term motion and relative motion

3.Distinguish between distance and displacement

And answer a question like this:

True or False

Hot glass looks the same as the cold glass.

Agenda

Catalyst	8 min
Pre-test – unit-1 – force & motion	20 min
PPt – Introduction to motion	25 min
Graphing – distance & displacement Speed/ velocity calculations	25min
Exit	5min

Friday
January 10,2020

Notes – Homework – Turn in the signed documents on or before 01/13

HW -Safety – Scavenger hunt – 01/09

Safety test – 01/10

GSE :SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

Catalyst:

1. ------- is the length between any two points
2. ---------- is the distance in a -------- line with ----------
3. True/False – Distance can be zero where as displacement can never be zero (Justify if the statement is false)

Topic: **Introduction to motion**

Essential Question: How do you know something is moved?

Learning targets: I can…..

Define the term motion and relative motion

Distinguish between distance and displacement

Describe the above two terms graphically and also by computation

And answer a question like this:

Motion is described with respect to a,

a. Graph

b. Displacement

c. Slope

d. Frame of reference

Agenda

Catalyst	7 min
Introduction to motion& distance/displacement wksht	30 min
Independent practice – graphing distance & displacement	25 min
Lab Safety test	20min
Exit	5min

Monday
January 13,2020

NOTES – Quiz – distance/displacement & speed/velocity/acceleration- 1/15

Turn in the signed documents on or before 01/13

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: Fill in the blank

1. A change in position is called ___
2. A measure of how far an object has moved is ----
3. The distance and direction of an object's change in position from a reference point is __
4. When you run down a straight road for 500 m then turn around and run back your _____is greater than your __

Topic: **Motion**

ESSENTIAL QUESTION:

Think of the total distance you have covered in your lifetime. Is it possible for you to move in some direction to reduce this distance to zero? Explain

LEARNING TARGETS:

I can define distance, displacement, speed, velocity, time and acceleration.

I can determine the tools needed to gather relevant data for analysis of motion of an object.

I can perform calculations of velocity and acceleration using data obtained directly from a graph

And answer a question like this:

For any object in motion, distance is always _____ displacement.

A. less than
B. less than or equal to
C. equal to
D. greater than or equal to
E. greater than

Agenda

Catalyst	10 min
Power point notes- acceleration & free fall	30min
Graphing speed & velocity-little dudes	25min
Reinforcement – speed, velocity & acceleration	15min
Exit – Essential question	5min

Tuesday
January 14,2020

NOTES – Quiz – distance/displacement & speed/velocity/acceleration- 1/15

- USA Test Prep Home Work – 1/14 due – 1/15

GSE: SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: *Must show the work - GUES*

A school bus moves down a road, dropping off students after school. The bus slows down from a speed of 15 meters per second to a full stop over a distance of 55 meters in 11 seconds.

a) **What is the average speed, in meters per second of the school bus while the bus is slowing down?**
b) **How is average speed different from instantaneous speed?**

Topic: Motion

ESSENTIAL QUESTION: How is *speed* different from *velocity*? Explain giving an example

LEARNING TARGETS:

I can define distance, displacement, speed, velocity, time and acceleration.
I can determine what tools are needed to gather relevant data for analysis of motion of an object.
I can perform calculations of velocity and acceleration using data obtained directly from a graph as well mathematically.

And answer a question like this:

Kaila runs competitively. She would like to calculate her average running speed each time she runs. Which data should Kaila record in order to calculate her average running speed?

A. her final speed and total time
B. her total distance and total time
C. her initial speed and final speed
D. her initial speed and total distance

Agenda

Catalyst	10 min
Ed puzzle – Graphing activity	30min
Graphing speed & velocity	25min
Practice – calculating velocity &acceleration	15min
Exit – Essential question	5min

Wednesday January15,2020

NOTES – Quiz – distance/displacement & speed/velocity/acceleration- 1/17

- USA Test Prep Home Work – 1/14 due – 1/17

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: Must show the work

Rebekah lives on a large, rectangular-shaped property that has a length 500 m and a width of 200 m. If it takes Rebekah 420 s to run the entire perimeter of her property, what is her average speed in meters per second rounded to the nearest hundredth?

Topic: **Motion**

ESSENTIAL QUESTION: How is velocity different from acceleration? Write three instances where an object can have an acceleration.

LEARNING TARGETS:

I can define distance, displacement, speed, velocity, time and acceleration.

I can determine what tools are needed to gather relevant data for analysis of motion of an object.

I can perform calculations of velocity and acceleration using data obtained directly from a graph

And answer a question like this:

***An* object has a constant acceleration of 2.0 meters per second 2. What is the time required for the object to accelerate from 8.0 meters per second to 28 meters per second?**

A. 4.0 s
B. 10.0 s
C. 16 s
D. 20.0 s

Agenda

Catalyst	8 min
Speed challenge lab	Whole class period
Graphing continued	
Reinforcement – Calculating acceleration	25min
Exit	5min

Thursday
January 16,2020

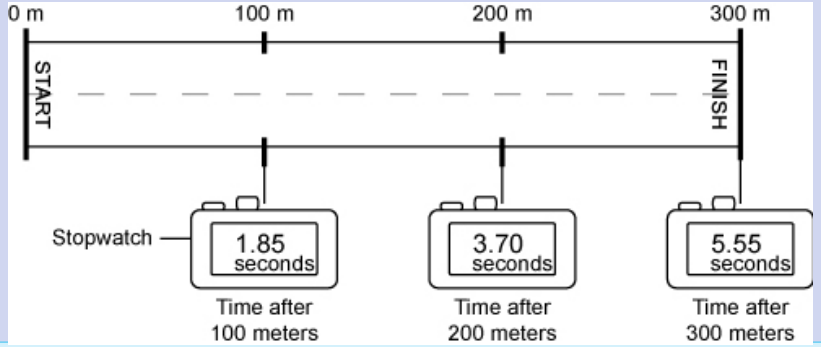
NOTES – Quiz – distance/displacement & speed/velocity/acceleration- 1/17

- USA Test Prep Home Work – 1/14 due – 1/17

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST:

The diagram shows the time it took for a race car to travel each 100-meter segment along a 300- meter track. *Calculate average speed* in m/s to the nearest tenth.



Topic: **Motion**

ESSENTIAL QUESTION: What does the slope of a distance-time graph indicate?

What is the rise and the run for an acceleration graph?

LEARNING TARGETS:

I can define distance, displacement, speed, velocity, time and acceleration.

I can determine what tools are needed to gather relevant data for analysis of motion of an object.

I can perform calculations of velocity and acceleration using data obtained directly from a graph

And answer a question like this:

Jermaine and Josh observed an anthill for their science project. They observed that an ant moved 45.0 millimeters in 85.0 seconds. How fast was the ant moving in millimeters per second to the nearest tenth?

A. 0.5

B. 1.9

C. 40.0

D. 130.0

Agenda

Catalyst	8 min
Power point – Acceleration due to gravity	25min
Practice – speed, velocity &acceleration	30 min
Reinforcement – Calculating acceleration	25min
Exit	5min

Friday
January 17,2020

NOTES – Quiz – distance/displacement & speed/velocity/acceleration- 1/17

- USA Test Prep Home Work – 1/14 due – 1/17

***GSE*:SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.**

***Catalyst*:**

If a ball that is freely falling has attained a velocity of *19.6m/s* after *2 seconds,* what is its velocity 5 seconds later?

(Note – Free falling objects have a constant acceleration of 9.8m/s2)

***Topic:* Motion - Graphing**

***Essential question*: How is a *straight horizontal line on a distance/time graph* different from the *same line in a velocity/time graph.* (Refer to the interpreting graphs notes from the last class period)**

LEARNING TARGETS:

I can define distance, displacement, speed, velocity, time and acceleration.

I can determine what tools are needed to gather relevant data for analysis of motion of an object.

I can perform calculations of velocity and acceleration using data obtained directly from a graph

And answer a question like this:

What is the velocity of the object with displacement of 6 km south in 2 hours?

A. 2 km/h south

B. 3 km/h south

C. 4 km/h south

D. 6 km/h south

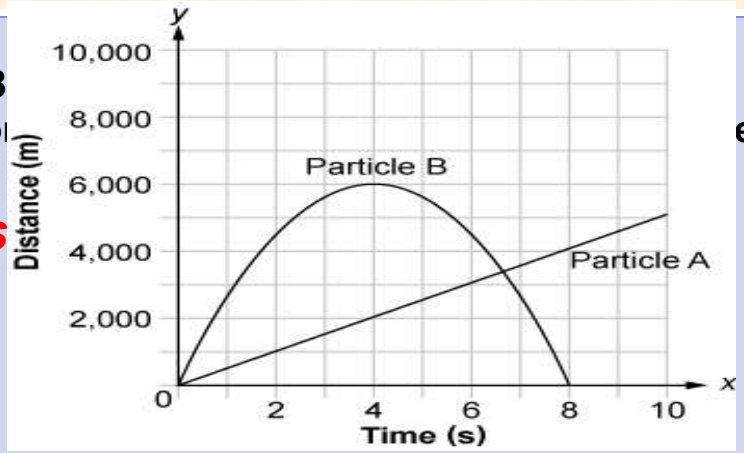
Agenda

Catalyst	8 min
Quiz-1-motion – SPS8-a	25min
Speed Challenge lab	Remaining class period
Exit	5min

Tuesday
January 21,2020

NOTES – Quiz – Newton's Laws- 1/23
- USA Test Prep Home Work – 1/14 due – 1/17

***GSE*:SPS8**
informatio
mass, and
Catalys



1. ***What is the dependent & the independent variables***
2. ***Describe the motion of particle A***
3. ***Describe the motion of particle B***

***Topic:* Motion - Graphing**

***Essential question*: How is a distance/time graph different from the velocity/time graph? (Refer to the interpreting graphs notes from the last class period)**

LEARNING TARGETS:

I can define distance, displacement, speed, velocity, time and acceleration.
I can determine what tools are needed to gather relevant data for analysis of motion of an object.
I can perform calculations of velocity and acceleration using data obtained directly from a graph

And answer a question like this:

What is the velocity of the object with displacement of 6 km south in 2 hours?

A. 2 km/h south
B. 3 km/h south
C. 4 km/h south
D. 6 km/h south

Agenda

Catalyst	8 min
Introduction to Newton's Laws – Notes	25min
Newton's second law calculations	30 min
Quiz – concept distance/displacement/speed & velocity	10min
Exit	5min

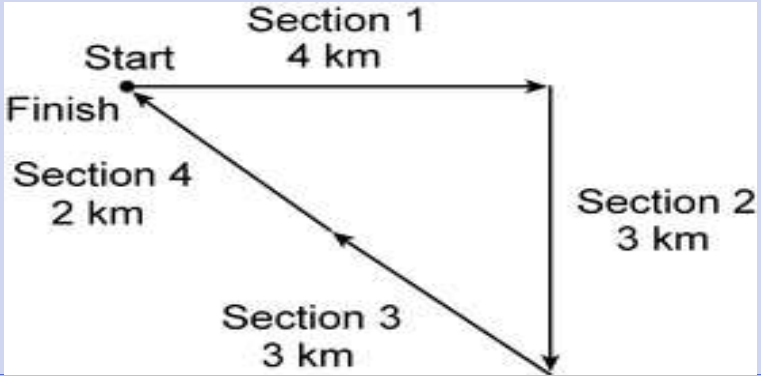
Wednesday
January 22,2020

NOTES – Quiz – Newton's Laws- 1/24
- USA Test Prep Home Work -2 – 1/22 due – 1/26

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: Draw the picture and answer the question.

If a racer maintained a constant speed, during which sections of the race would the racer's velocity be the same?



Topic: **Graphing motion**

ESSENTIAL QUESTION: What two pieces of information are necessary to calculate an objects *velocity*? What does it mean to have a *straight horizontal* line on a distance/time graph?(sketch)

LEARNING TARGETS:

I can define distance, displacement, speed, velocity, time and acceleration.
I can determine what tools are needed to gather relevant data for analysis of motion of an object.
I can perform calculations of velocity and acceleration using data obtained directly from a graph

And answer a question like this:

Jermaine and Josh observed an anthill for their science project. They observed that an ant moved 45.0 millimeters in 85.0 seconds. How fast was the ant moving in millimeters per second to the nearest tenth?

A. 0.5
B. 1.9
C. 40.0
D. 130.0

Agenda

Catalyst	8 min
Free Fall Acceleration - ADI	30min
PPT – Free Fall	30 min
Start – Newton's Laws – ppt (1st &2nd)	20min
Exit	5min

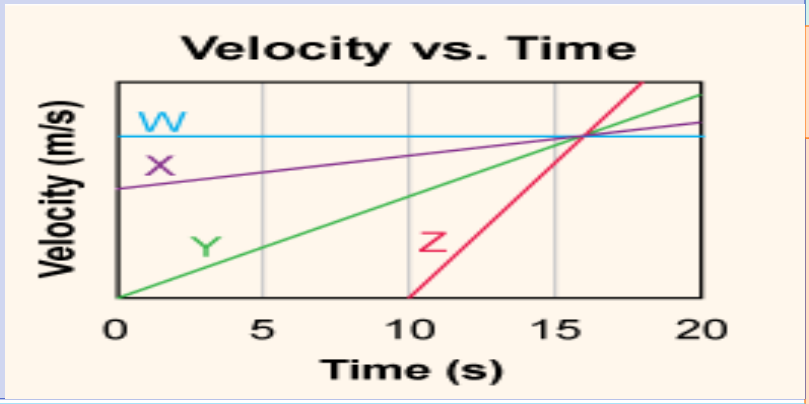
Thursday
January 23,2020

NOTES – Quiz – Newton's Laws- 1/24
- USA Test Prep Home Work -2 – 1/22 due – 1/26

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: Draw the picture

The graph shows the relationship between velocity and time for four cars, *W*, X, *Y*, and *Z*, traveling westward along a straight road. Which car has the greatest of acceleration. Justify.



Topic: **Newton's Laws of Motion**

ESSENTIAL QUESTION: How is balanced forces different from unbalanced forces?

LEARNING TARGETS:

I can describe each of Newton's three Laws of Motion.
I can use real-world examples to represent Newton's three laws
I can distinguish balanced and unbalanced forces using a force diagram.

And answer a question like this:

Which of the following causes people in a moving car to continue moving forward, even when the car stops?

A. inertia
B. gravity
C. friction
D. tension

Agenda

Catalyst	8 min
Newton's Laws - Practice	25min
Finding Net Force - Practice	30 min
Video – Newton's Laws	25min
Exit	5min

Friday
January 24,2020

NOTES – Quiz – Newton's Laws- 1/27
- USA Test Prep Home Work -2 – 1/22 due – 1/30

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: Must show the work (GUES)

A car is accelerated at 4.0 m/s² from rest. *How long*, to the *nearest tenth* of a second, does it take the car to reach a speed of 28 m/s?

Topic: **Newton's Laws of Motion**

ESSENTIAL QUESTION: **What is another name for Newton's first law?**

State Newton's 1st law of motion.

LEARNING TARGETS:

I can describe each of Newton's three Laws of Motion.
I can use real-world examples to represent Newton's three laws
I can distinguish balanced and unbalanced forces using a force diagram.

And answer a question like this:

Which of the following causes people in a moving car to continue moving forward, even when the car stops?

A. inertia
B. gravity
C. friction
D. tension

Agenda

Catalyst	8 min
Hk - Forces	25min
IP – Demo – forces-index card	30 min
Test correction	25min
Exit	5min

Monday
January 27,2020

NOTES – Quiz – Newton's Laws- 1/27
- USA Test Prep Home Work -2 – 1/22 due – 1/30

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: Must show the work

An object starts from *rest* and *falls freely*. What is the *speed* of the object at the end of 3.00 seconds?

Topic: **Newton's Laws of Motion**

ESSENTIAL QUESTION: How is balanced forces different from unbalanced forces? What will be the net force in the above cases?

LEARNING TARGETS:

I can describe each of Newton's three Laws of Motion.
I can use real-world examples to represent Newton's three laws
I can distinguish balanced and unbalanced forces using a force diagram.

And answer a question like this:

Which of the following causes people in a moving car to continue moving forward, even when the car stops?

A. inertia
B. gravity
C. friction
D. tension

Agenda

Catalyst	8 min
Hk - Forces	5min
Newtons Laws - stations	35 min
Study guide – Newtons Laws	25min
Exit	5min

Tuesday
January 28,2020

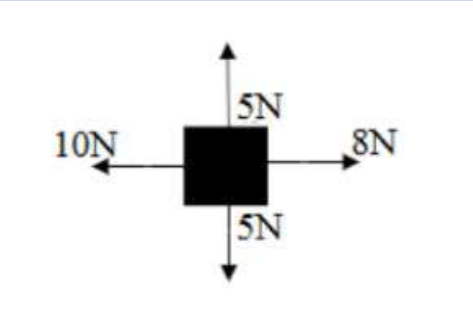
NOTES – Quiz – Newton's Laws- 1/27
- USA Test Prep Home Work -2 – 1/22 due – 1/30

LEARNING TARGETS:

I can describe each of Newton's three Laws of Motion.
I can use real-world examples to represent Newton's three laws of motion.
I can perform calculations of velocity and acceleration using data obtained directly from a graph

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST: Name the Newton's law to find the acceleration. Write the equation (use notes from yesterday)



Find the acceleration of the 5kg block above.

Topic: Topic: **Newton's Laws of Motion**

ESSENTIAL QUESTION: Wayne wants to become a lifeguard. For part of the lifeguard test, he has to float in the pool for five minutes. Why does Wayne float instead of sinking to the bottom of the pool? Which of the Newton's Laws is applied in the above situation. Explain

And answer a question like this:

Jordan has a twin sister, Kathy. Jordan weighs 36 kilograms, and Kathy weighs 30 kilograms. Jordan and Kathy like to play on the swing set at the park. Their father pushes each of them until they are swinging to the same height. Which is true about the forces at work?

A. Kathy applied more force to the swing set than to Jordan.
B. Their father applied more force to Kathy than to Jordan.
C. Their father applied less force to Kathy than to Jordan.
D. Kathy applied more force to her father than to Jordan.

Agenda

Catalyst	8 min
Quiz – Newtons Laws (SPS8b&c)	25min
Lab – Work - Glencoe	30 min
Begin – Work & machines-ppt	30 min
Exit	5min

Wednesday
January 29,2020

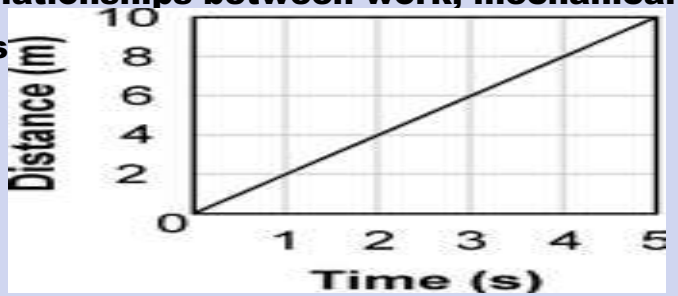
NOTES – Quiz – Newton's Laws- 1/27
- USA Test Prep Home Work -2 – 1/22 due – 1/30
UNIT 1 – TEST – 2/3(motion,Newtons laws, free fall&work &machines)

LEARNING TARGETS:

I can define work and mechanical advantage. (Knowledge)
I can explain how machines make doing work easier. (Knowledge)
I can calculate the work and mechanical advantage for simple machines. (Reasoning)

SPS8. d. Use mathematics and computational thinking to identify the relationships between work, mechanical advantage, and s

CATALYST:



a) Define the average speed
b) Write the equation and make a triangle for the equation
c) What is the average speed in the graph
d) What does a straight horizontal line on a distance /time graph tell us about the motion?

And answer a question like this:

As the fuel in a rocket ignites, the force of the gas expansion and explosion pushed to the back of the rocket and pushes the rocket forward

A. Newton's 1st Law
B. Newton's 2nd Law
C. Newton's 3rd Law

Topic: **work & Machines**

ESSENTIAL QUESTION: How is newton's 1st law different from the second one? Explain giving an example for each

Agenda

Catalyst	8 min
Power point – Work & Machine – part-1	25min
Simulation – Work/ no work	50 min
Practicing work problems	Remaining time
Exit	5min

Thursday
January 30,2020

NOTES – Quiz – Newton's Laws- 1/27

- USA Test Prep Home Work -2 – 1/22 due – 1/30

UNIT 1 – TEST – 2/3(motion,Newtons laws, free fall&work &machines)

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST:

a) **How is mass different from weight?**

b) **Write the equation for weight and make a triangle**

c) **A physical science text book has a mass of 2.2 kg What is the weight on the Earth?**

d) **What is its weight on Mars (g = 3.7 m/s^2).**

Topic: **Work & Machines**

ESSENTIAL QUESTION: When Andrew, age 7, and his mom are skipping pebbles on a pond, the pebbles that Andrew's mom throws go farther and faster than his. Which of the Newton's Laws is applied in the above situation. Explain

LEARNING TARGETS:

I can define work and mechanical advantage. (Knowledge)

I can explain how machines make doing work easier. (Knowledge)

I can calculate the work and mechanical advantage for simple machines. (Reasoning)

And answer a question like this:

A frog leaping upward off his lily pad is pulled downward by gravity and lands on another lily pad instead of continuing on in a straight line.

A. Newton's 1st Law

B. Newton's 2nd Law

C. Newton's 3rd Law

Agenda

Catalyst	8 min
Practice – Work and power equations	40min
PPt – Simple machines	30 min
Test correction – SPS8-1	
Exit	5min

Friday
January 31,2020

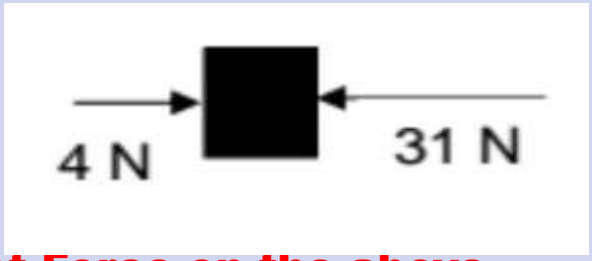
NOTES – Quiz – Newton's Laws- 1/27
- USA Test Prep Home Work -3 – 1/31 - 2/05
UNIT 1 – TEST – 2/3(motion,Newtons laws, free fall&work &machines)

LEARNING TARGETS:

I can define work and mechanical advantage. (Knowledge)
I can explain how machines make doing work easier. (Knowledge)
I can calculate the work and mechanical advantage for simple machines. (Reasoning)

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST:



a) **Find the Net Force on the above object**
b) **Write Newton's 2nd Law equation**
c) **How is force and mass related?**
d) **How is mass and acceleration are related?**
e) **Find the acceleration of the 3 kg block in the diagram above.**

And answer a question like this:

A 4 kg mass sits on a table that has 5 N of friction. If Maria applies a 25 N force to the mass, how fast will it accelerate?

A. 7.5 m/2²
B. 100 m/s²
C. 5 m/s²
D. 10

Topic: Topic: **Newton's Laws of Motion**

ESSENTIAL QUESTION: A boy weighing 500 newtons is on a dock and exerts a force of 300 newtons on a sailboat weighing 20,000 newtons as he pushes it away from the dock. How much force does the sailboat exert on the boy? Identify the action & reaction forces.

Agenda

Catalyst	8 min
Simple machines & Mechanical advantage - ppt	30min
Reinforcement – Calculating work, power & mechanical advantage	Remaining time
Exit	5min

Monday
February 03,2020

NOTES - USA Test Prep Home Work -3 – 1/31 - 2/06

UNIT 1 – TEST – 2/3(motion,Newtons laws, free fall&work &machines)

SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

CATALYST:

A 4 kg mass sits on a table that has 5 N of friction. If Maria applies a 25 N force to the mass, how fast will it accelerate?

a) Draw a force diagram

a) **Find the Net Force on the above object**

b) **Write Newton's 2nd Law equation**

c) **How is force and acceleration related?**

Topic: **Simple Machines & MA**

ESSENTIAL QUESTION: How is Newton's 2nd law different from the 3rd law? Explain giving an example.

LEARNING TARGETS:

I can define work and mechanical advantage. (Knowledge)

I can explain how machines make doing work easier. (Knowledge)

I can calculate the work and mechanical advantage for simple machines. (Reasoning)

And answer a question like this:

After you start up your motorcycle, as you give it more gas, it goes faster

A. Newton's 1st Law (The Law of Inertia)

B. Newton's 2nd Law

C. Newton's 3rd Law

Agenda

Catalyst	8 min
Mixed problems – MA, W & P	50min
Study Guide – SPS8d – Work & machines	Remaining time
Exit	5min

Tuesday
February 04,2020

NOTES - USA Test Prep Home Work -3 – 1/31 - 2/06

UNIT 1 – TEST – 2/3(motion,Newtons laws, free fall&work &machines)

LEARNING TARGETS:

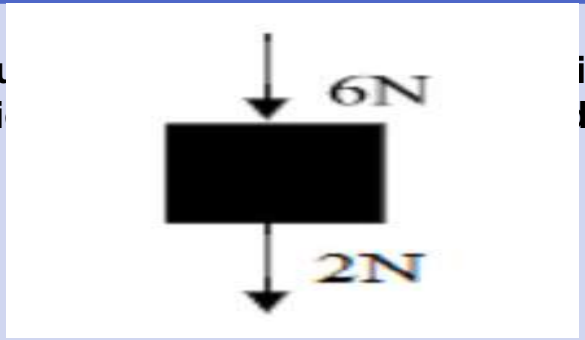
I can define work and mechanical advantage. (Knowledge)

I can explain how machines make doing work easier. (Knowledge)

I can calculate the work and mechanical advantage for simple machines. (Reasoning)

SPS8. Obtain, evalu ion to explain the relati motion.

CATALYST:



a) Write the units for force, mass and acceleration

a) Find the Net Force on the above object

b) Write Newton's 2nd Law equation

c) How is force and mass related?

d) Find the acceleration of the 4 kg block in the diagram above

And answer a question like this:

When Bobby, age 5, and his dad are skipping pebbles on a pond, the pebbles that Bobby's dad throws go farther and faster than his.

A. Newton's 1st Law (The Law of Inertia)

B. Newton's 2nd Law

C. Newton's 3rd Law

Topic: **Work & Machine**

ESSENTIAL QUESTION : What are balanced forces**? How do balanced forces influences the motion?**

Agenda

Catalyst	8 min
Unit-1-test	50min
Introduction Energy	Remaining time
Exit	5min

Tuesday
February 04,2020

NOTES - USA Test Prep Home Work -3 – 1/31 - 2/06

UNIT 1 – TEST – 2/3(motion,Newtons laws, free fall&work &machines)

LEARNING TARGETS:

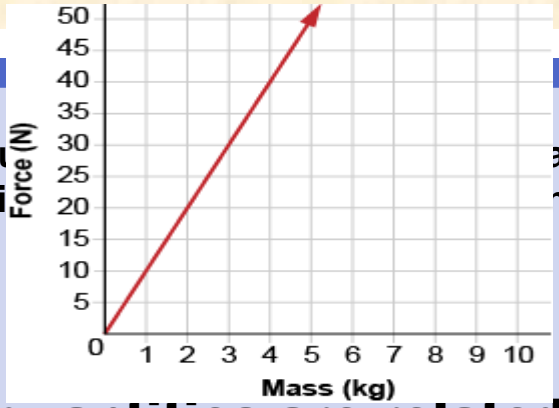
I can define work and mechanical advantage. (Knowledge)

I can explain how machines make doing work easier. (Knowledge)

I can calculate the work and mechanical advantage for simple machines. (Reasoning)

SPS8. Obtain, evalu…ation to explain the relati…nd motion.

CATALYST:



a) What two quantities are related in the above graph?

b) How does the force change as the objects mass changes?

c) What equation describes the relation between gravitational force and mass?

d) Name & write the symbol for the term that describes the acceleration on free falling objects?

And answer a question like this:

A girl weighing 400 newtons is on a dock and exerts a force of 100 newtons on a sailboat weighing 10,000 newtons as she pushes it away from the dock. How much force does the sailboat exert on the girl?

A. 25 N

B. 100 N

C. 400 N

D. 10,000 N

Topic: **Work & Machine**

ESSENTIAL QUESTION : How is acceleration different from acceleration due to gravity?

What is the acceleration due to gravity on objects on the earth?

Agenda

Catalyst	8 min
Unit-1-test	50min
Introduction Energy	Remaining time
Exit	5min

Wednesday
February 05,2020

NOTES - USA Test Prep Home Work -3 – 1/31 - 2/06

UNIT 1 – TEST – 2/3(motion,Newtons laws, free fall&work &machines)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST: Draw the triangle for the equation to be used and then solve for the following.

An old trick to determine an approximate distance to a storm is to count the number of seconds it takes to hear a peal of thunder after seeing a lightning bolt and divide that number by 5 to get the number of miles to the storm. If it takes *15seconds* for thunder to reach an observer *3 miles away*, about *how fast* is the sound of the thunder traveling in *miles per second to the nearest tenth*?

Topic: **Energy**

ESSENTIAL QUESTION: What two things are necessary for the work to be done? Explain your answer giving an example.

LEARNING TARGETS: I can...

identify and describe the different types of energy forms

identify the types of energy transformation that occur within a system.

define the Law of Conservation of Energy.

describe energy transformations between different forms of energy.

And answer a question like this:

Jermaine used 12 newtons of force to push a box 4 meters down the driveway. How much work, measured in joules (J), did he do to move the box?

A. 3 J

B. 8 J

C. 16 J

D. 48 J

Agenda

Catalyst	8 min
Phenomenon – Niagra falls - Energy	50min
Independent practice – Types of energy - Glencoe	30 min
Reinforcement – transformation of energy - PHET	Remaining time.
Exit	5min

Thursday
February 06,2020

NOTES - USA Test Prep Home Work – 2/7 to 12 – SPS7a.

Quiz – types of energy & transfer (2/11)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

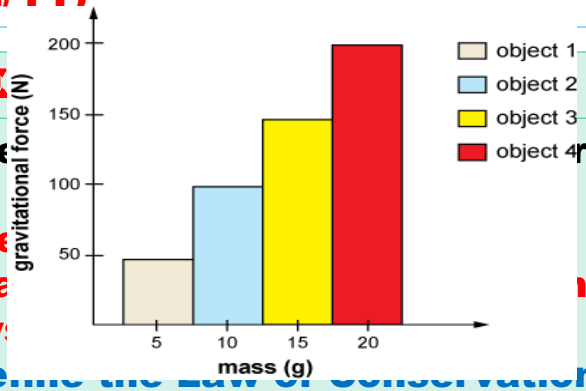
CATALYST: Sketch the graph & answer the following questions.

1. **What are the independent and dependent variables?**
2. **How are masses of objects related with the gravitational force?**
3. **What is another word for gravitational force?**
4. **Write the equation for finding the gravitational force.**
5. **How much would be the mass of an object in planet X with a 20N weight if it experiences a gravity (acceleration due to gravity) of 4m/s²**

Topic: **Energy**

ESSENTIAL QUESTION: How is work different from power? Explain your answer by using equations.

LE



ide rent types of ide tra in a sy

de n of Energy.

describe energy transformations between different forms of energy.

And answer a question like this:

Jermaine used 12 newtons of force to push a box 4 meters down the driveway. How much work, measured in joules (J), did he do to move the box?

A. 3 J

B. 8 J

C. 16 J

D. 48 J

Agenda

Catalyst	8 min
Chapter outline – 15.1	25min
Independent practice – test correction	Remaining time
Exit	5min

Friday
February 07,2020

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST: Sketch the graph and answer the questions

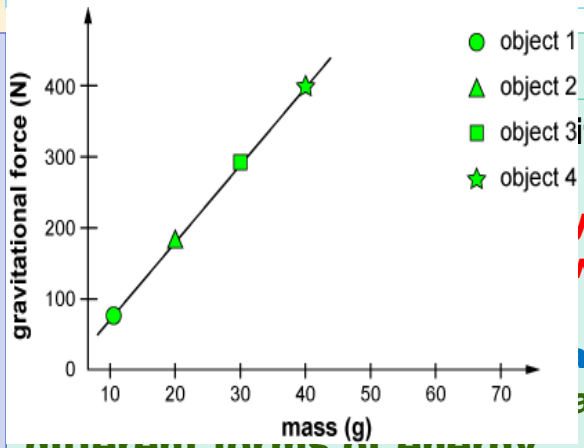
1. **What are the independent and dependent variables?**
2. **What does it mean by a linear relation? Do the variables have a linear relation? Describe.**
3. **Name one factor that can resist the motion of objects in air?**
4. **If a crumpled piece of notebook paper and a flat sheet of notebook paper are dropped at the same time from the same height, why does the crumpled piece of paper land first?**

Topic: **Energy**

ESSENTIAL QUESTION: How does the acceleration affect the free falling objects when there is no air resistance or vacuum? Explain your answer giving an example?

NOTES - USA Test Prep Home Work – 2/7 to 12 – SPS7a.

Quiz – types of energy & transfer (2/11)



ifferent types

/

within a

ation of Energy.

ations between

different forms of energy.

And answer a question like this:

Select the three statements that are examples of work.

A. A teacher gives a lecture in class.

B. A student listens to classical music.

C. A father pushes a baby in a carriage.

D. A cat walks from the bushes to the garage.

E. A baseball player throws a ball across a field.

F. A woman picks up and carries a grocery bag to her car.

Agenda

Catalyst	8 min
Notes – 15.1	25min
Practice – Energy transfer	40 min
Intro to heat transfer	Remaining time.
Exit	5min

Monday
February 10,2020

NOTES - USA Test Prep Home Work – 2/7 to 12 – SPS7a.

Quiz – types of energy & transfer (2/11)

Re test – unit-1- 2/11 (Tuesday)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

1. **What is mechanical advantage?**
2. **What type of simple machine is it?**
3. **Write and label each quantities in the equation for MA for the above machine?.**
4. **Find the mechanical advantage of the above machine?**

Topic: **Energy**

ESSENTIAL QUESTION: What is efficiency? Why is it not possible to have machines with 100% efficiency?(use your notes)

LEARNING TARGETS:

e different types

rgy

ur within a

rvation of Energy.

describe energy transformations between different forms of energy.

And answer a question like this:

Jermaine used 12 newton's of force to push a box 4 meters down the driveway. How much work, measured in joules (J), did he do to move the box?

A. 3 J

B. 8 J

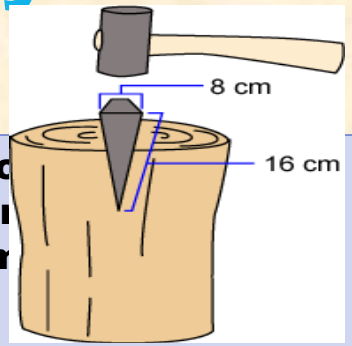
C. 16 J

D. 48 J

Agenda

Catalyst	8 min
Intro – Heat transfer	60min
Heat transfer – explore PBS media	20 min
Guided notes – 15.2	Remaining time.
Exit	5min

Tuesday
February 11



SPS7. Obtain, evaluate, and co
information to explain transfo
flow of energy within a system

CATALYST:

Gabrielle uses a simple machine as shown to the right to help her split wood. Answer the following questions.

a) What simple machine is it?

b) How do you find the mechanical advantage of it? Calculate the MA

c) The simple machine below is a type of ---------- ----------

Topic: **Heat Transfer**

ESSENTIAL QUESTION: If a large force is exerted on an object, when is no work performed? Write at least two statements to explain your answer?

NOTES - USA Test Prep Home Work – 2/7 to 12 – SPS7a.

Quiz – types of energy & transfer (2/12)

Re test – unit-1- 2/11 (Tuesday)

LEARNING TARGETS: I can.....

distinguish between conduction, convection and radiation and give examples of each.

define temperature, heat, and thermal energy.

classify given scenarios as conduction, convection or radiation.

infer which method of heat transfer occurs within a system.

And answer a question like this:

Select the three statements that are examples of work.

A. A teacher gives a lecture in class.

B. A student listens to classical music.

C. A father pushes a baby in a carriage.

D. A cat walks from the bushes to the garage.

E. A baseball player throws a ball across a field.

F. A woman picks up and carries a grocery bag to her car.

Agenda

Catalyst	8 min
Guided notes – conservation of energy	25min
Reading – Heat transfer	25 min
Scenarios – heat transfer	Remaining time.
Exit	5min

Wednesday
February 12,2020

NOTES - USA Test Prep Home Work – 2/7 to 13 – SPS7a.

Quiz – types of energy & transfer (2/12)

Re test – unit-1- 2/11 (Tuesday)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST: Emily dropped four different objects in a vacuum. The graph shows the data she collected.

1. What is the gravitational force on the 1st and the 4th objects?

2. Write a statement that best describes the data Emily collected.

3. What is acceleration due to gravity? What letter represents it? What is its value on earth?

Topic: Heat transfer

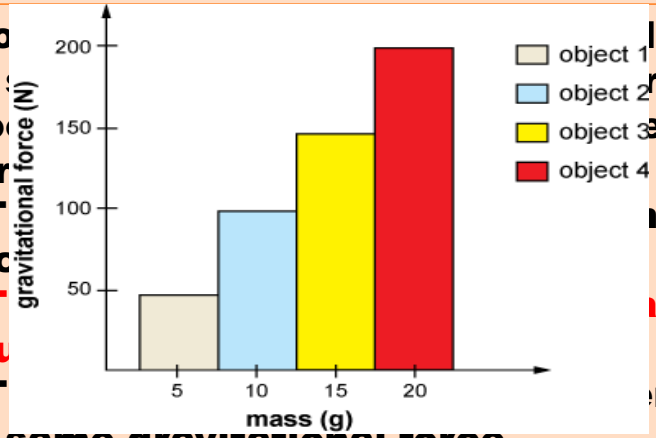
ESSENTIAL QUESTION: During a game, a student accidentally knocks similar gym bags, one empty and one full of clothes, off the back of the bleachers. If there is *no wind resistance*, which bag will hit the ground first? Use the term that describes the above phenomenon in your answer.

LEARNING TARGETS:

distinguish between conduction, convection and radiation and give examples of each.
define temperature, heat, and thermal energy.
classify given scenarios as conduction, convection or radiation.
infer which method of heat transfer occurs within a system.

And answer a question like this:

A so… …l from the … …rth. Cho… …e corr… …
A. T… …e to reac…
B. T… …ch the grou…
C. T… …erience the same gravitational force.
D. The gravitational force each object experiences is dependent on mass.
E. The soccer ball and the car experience the same acceleration due to gravity.



Agenda

Catalyst	8 min
Heat transfer – guided notes	25 min
CFA – Heat transfer	15 min
Reinforcement worksheet – heat transfer	30 min
Exit	5min

Thursday
February 13,2020

NOTES - USA Test Prep Home Work – 5- 2/14 to 22 – SPS7 b & c

Quiz – specific heat and phase changes (2/25)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST : use the graph to answer,

1. **Write a statement using the word "linear" to show the relation between mass & gravitational force**
2. **What are the two factors that can influence the gravitational force?**
3. **How is gravitational force different from frictional force?**
4. **What will be the acceleration due to gravity in a friction less medium or in vacuum?**

Topic: Specific heat

ESSENTIAL QUESTION: A lever is used to remove a rock from the ground. Write the equation for calculating the MA of a lever and state a way to increase the MA for a lever.

LEARNING TARGETS: I CAN....

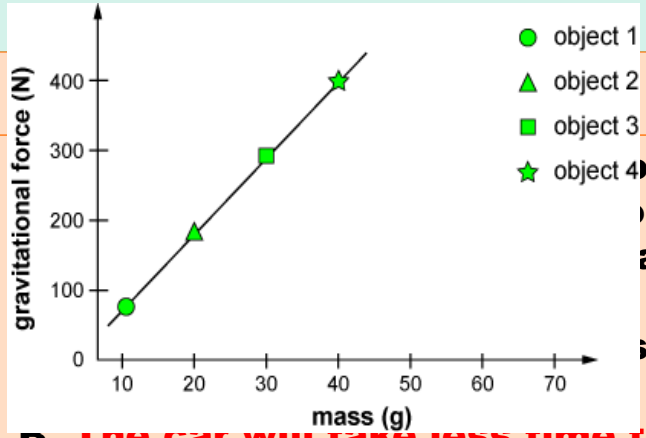
define specific heat and explain how specific heat relates to heat transfer.

list the differences between conductors and insulators.

identify factors affecting specific heat.

explain how the value of specific heat determines its use as a conductor or insulator.

solve basic problems using the formula for specific heat ($Q=mc\Delta T$).



…pped from …n Earth. …at are …s time to …

B. The car will take less time to reach the ground than the soccer ball.

C. The soccer ball and the car experience the same gravitational force.

D. The gravitational force each object experiences is dependent on mass.

E. The soccer ball and the car experience the same acceleration due to gravity.

Agenda

Catalyst	8 min
Guided notes – specific heat	25min
Calculating specific heat	Remaining time
Graphing specific heat data	
Exit	5min

Friday
February 14,2020

NOTES - USA Test Prep Home Work – 5- 2/14 to 22 – SPS7 b & c

Quiz – specific heat and phase changes (2/25)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

Lucia raced her car on a raceway. She started the race at a standstill on the starting line, and when she finished the race, she was traveling 110 miles per hour. She wants to calculate her average acceleration. What other information will Lucia need to do so?

1. **Write the equation for calculating acceleration**
2. **Make a list of given and the unknown information that you are looking for.**
3. **What information is missing?**

Topic: **Specific Heat capacity**

ESSENTIAL QUESTION: How do you compare the *acceleration due to gravity* of objects when they fall through vacuum and through the air? What is the value of "g" on the

LEARNING TARGETS:

define specific heat and explain how specific heat relates to heat transfer.
list the differences between conductors and insulators.
identify factors affecting specific heat.
explain how the value of specific heat determines its use as a conductor or insulator.
solve basic problems using the formula

And answer a question like this:

Which best describes energy changes in a system?
A. Energy is conserved, but it can be created or destroyed.
B. Energy is conserved, and it cannot be created or destroyed.
C. Energy is not conserved, and it can be created or destroyed.
D. Energy is not conserved, but it cannot be created or destroyed

Agenda

Catalyst	8 min
Specific heat calculations	40min
Reinforcement - data analysis specific heat	Remaining time
Intro to phase changes – Video lesson	
Exit	5min

Monday
February 24,2020

NOTES - USA Test Prep Home Work – 5- 2/14 to 22 – SPS7 b & c

Quiz – specific heat and phase changes (2/25)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

Jermaine and Josh observed an anthill for their science project. They observed that an ant moved 45.0 millimeters in 85.0 seconds. How fast was the ant moving in millimeters per second to the nearest tenth?

a) **What units are used for the distance and the time?**
b) **How much would be the above measurements in meters and minutes**
c) **Use GUES method and solve the problem?**

Topic: **Specific Heat & Phase changes**

ESSENTIAL QUESTION: How is *exothermic* reactions different from *endothermic*?

List all the phase changes which are exo and endothermic.

LEARNING TARGETS:

define specific heat and explain how specific heat relates to heat transfer.
list the differences between conductors and insulators.
identify factors affecting specific heat.
explain how the value of specific heat determines its use as a conductor or insulator.
solve basic problems using the formula

And answer a question like this:

Which best describes energy changes in a system?

A. Energy is conserved, but it can be created or destroyed.
B. Energy is conserved, and it cannot be created or destroyed.
C. Energy is not conserved, and it can be created or destroyed.
D. Energy is not conserved, but it cannot be created or destroyed

Agenda

Catalyst	8 min
Phase changes – graphing analysis	40min
Study guide – Unit-2	Remaining time
Exit	5min

Tuesday
February 25,2020

NOTES - USA Test Prep Home Work – 5- 2/14 to 22 – SPS7 b & c

Quiz – specific heat and phase changes (2/25)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

A car is *accelerated at 6.0 m/s²* from *rest*. How *long,* to the *nearest tenth* of a second, does it take the car to reach a *speed of 30 m/s*?

a) **What units are used for the acceleration and speed?**
b) **What words describe the initial speed and the time in the question?**
c) **Use GUES method and solve the problem?**

Topic: **Phase Changes**

ESSENTIAL QUESTION: How is sublimation different from deposition? What happens to the temperature during a phase change?

LEARNING TARGETS: I can

predict what happens to the flow of energy in a given scenario based on trends on a heating/cooling curve.
classify phase changes based on the flow of energy.
compare how temperature affects the release or absorption of energy.
create a heating/cooling curve for a substance from given experimental data.

And answer a question like this:

Which best describes energy changes in a system?
A. Energy is conserved, but it can be created or destroyed.
B. Energy is conserved, and it cannot be created or destroyed.
C. Energy is not conserved, and it can be created or destroyed.
D. Energy is not conserved, but it cannot be created or destroyed

Agenda

Catalyst	8 min
Review stations – Unit- energy	40min
Study guide – Energy unit	Remaining time
Exit	5min

Wednesday
February 26,2020

NOTES - USA Test Prep Home Work – 5- 2/14 to 22 – SPS7 b & c

Quiz – specific heat and phase changes (2/25)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

a) What is energy?
b) What is work?
c) Name the unit used for measuring both the quantities?

Topic: Phase Changes

ESSENTIAL QUESTION: How is potential energy different from kinetic energy? Explain your answer giving an example for each.

LEARNING TARGETS:

predict what happens to the flow of energy in a given scenario based on trends on a heating/cooling curve.
classify phase changes based on the flow of energy.
compare how temperature affects the release or absorption of energy.
create a heating/cooling curve for a substance from given experimental data.

And answer a question like this:

Which best describes energy changes in a system?
A. Energy is conserved, but it can be created or destroyed.
B. Energy is conserved, and it cannot be created or destroyed.
C. Energy is not conserved, and it can be created or destroyed.
D. Energy is not conserved, but it cannot be created or destroyed

Agenda

Catalyst	8 min
Energy – Review Stations	40min
Quiz - Energy	Remaining time
Introduction to Waves	
Exit	5min

Thursday
February 27,2020

NOTES - USA Test Prep Home Work – 6- 2/27 to 3/ 3 – SPS9 a

Quiz – specific heat and phase changes (2/25)

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

1.--- energy in a system is equal to the sum of the system's kinetic and potential Energies

2.------ energy is generated by the random motion of particles in a system

3. -------energy is stored in the bonds between atoms and molecules

4.---------- form of energy is in moving electrical charges

Topic: ENERGY & PHASE CHANGES

ESSENTIAL QUESTION: How is elastic potential energy different from Gravitational potential energy? Explain your answer giving an example for each.

LEARNING TARGETS:

predict what happens to the flow of energy in a given scenario based on trends on a heating/cooling curve.

classify phase changes based on the flow of energy.

compare how temperature affects the release or absorption of energy.

create a heating/cooling curve for a substance from given experimental data.

And answer a question like this:

Which best describes energy changes in a system?

A. Energy is conserved, but it can be created or destroyed.

B. Energy is conserved, and it cannot be created or destroyed.

C. Energy is not conserved, and it can be created or destroyed.

D. Energy is not conserved, but it cannot be created or destroyed

Agenda

Catalyst	8 min
Unit -2- Energy Summative	60min
Intro to waves	Remaining time
Notes – Intro to waves	
Exit	5min

Friday
February 28,2020

NOTES - USA Test Prep SPS9-a &b – 2/28 to 3/ 4

Quiz – SPS9 – a &b (3/2) (waves)

SPS9. Obtain, evaluate, and communicate information to explain the properties of waves..

CATALYST:

1. Write the equation for finding the kinetic energy and label each quantity wit their corresponding units.

2. Find the mass of an object which is moving with a velocity of 60m/s with a kinetic energy of 800j?

NOTE – Must show the work

Topic: Introduction to Waves

ESSENTIAL QUESTION: Write the equation for kinetic energy and state the relation between,

a) KE & Velocity b) KE & mass

c) Mass & velocity

LEARNING TARGETS: *I can*

define the wavelength, frequency, energy, and amplitude.

explain the difference between electromagnetic and mechanical waves.

analyze how changes in wavelength, frequency, energy, and amplitude can affect each other.

predict whether the energy in an electromagnetic wave will increase or decrease based on changes in frequency.

And answer a question like this:

Which best describes energy changes in a system?

A. Energy is conserved, but it can be created or destroyed.

B. Energy is conserved, and it cannot be created or destroyed.

C. Energy is not conserved, and it can be created or destroyed.

D. Energy is not conserved, but it cannot be created or destroyed

Agenda

Catalyst	8 min
Introduction to Waves	15min
WebQuest - Waves	Remaining time
Exit	5min

Thursday
October 03,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 9/27
USA test prep – Energy – 9/27

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

Hydroelectric dams are often used to generate electrical energy. The energy of the water flowing over the dam is harnessed and transformed into electrical energy that can power appliances and other tools.

a) **What type of energy is transformed into electrical energy by hydroelectric dams?**
b) **Define the type of energy in the above situation giving another example.**

Topic: Topic: **ENERGY & ITS FORMS**

ESSENTIAL QUESTION: What is Electromagnetic energy? Explain your answer giving an example.

LEARNING TARGETS:

I can define potential &kinetic energy
I can analyze an energy form in a scenario and calculate for the appropriate form of energy
I can infer the type of energy associated with varied real life situations

And answer a question like this:

Which best describes energy changes in a system?
A. Energy is conserved, but it can be created or destroyed.
B. Energy is conserved, and it cannot be created or destroyed.
C. Energy is not conserved, and it can be created or destroyed.
D. Energy is not conserved, but it cannot be created or destroyed

Agenda

Catalyst	8 min
Power point – Transformation of energy	40min
Independent practice – Identifying transformations in energy	Remaining time
Weight calculations	
Exit	5min

Friday
October 04,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 9/27
USA test prep – Energy – 9/27

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

Melanie is watching one of her favorite programs on television. *The television transforms electrical energy from an outlet into other kinds of energy*. Which types of energy are released by a television?

Topic: **ENERGY & ITS FORMS**

ESSENTIAL QUESTION: What kind of energy transformation is taking place when a hair dryer is used?

LEARNING TARGETS:

I can define potential &kinetic energy
I can analyze an energy form in a scenario and calculate for the appropriate form of energy
I can infer the type of energy associated with varied real life situations

And answer a question like this:

In order to power an elevator, a motor must convert electrical energy into which other type of energy?

A. mechanical energy
B. nuclear energy
C. light energy
D. thermal energy

Agenda

Catalyst	8 min
Thermal energy & heat - notes	40min
Practice – Thermal energy &heat transfer	Remaining time
Weight calculations	
Exit	5min

Monday
October 07,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 10/14

USA test prep practice – heat transfer – 10/08

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

The picture below shows a machine called a turbine that is used to make electricity.

How does the turbine make electricity? Write all the different energy forms involved in the above process.

Topic: **ENERGY & ITS FORMS**

ESSENTIAL QUESTION: Moving water can be used to produce electrical energy. What makes this possible?

LEARNING TARGETS:

I can define potential &kinetic energy

I can analyze an energy form in a scenario and calculate for the appropriate form of energy

I can infer the type of energy associated with varied real life situations

And answer a question like this:

Amina places a stainless steel spoon in a cup of hot coffee, as shown in the picture.
How does the motion of the atoms in the spoon change when the spoon is placed in the hot coffee?

A. The atoms vibrate faster due to the conduction of heat through atoms in the spoon.

B. The atoms vibrate slower due to the conduction of heat through atoms in the spoon.

C. The atoms move closer toward each other due to the radiation of heat through atoms in the spoon.

D. The atoms move away from each other due to the convection of heat through atoms in the spoon.

Agenda

Catalyst	8 min
Phase changes & phase change diagrams	40min
Independent practice – Analyzing phase change diagrams	Remaining time
Weight calculations	
Exit	5min

Tuesday
October 08,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 10/14

USA test prep practice – heat transfer – 10/08

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST: Identify the energy transformation

1. **What transformation occurs when a telephone rings?**
2. **What kind of energy transformation is taking place when a hair dryer is used?**
3. **Electric swings for babies primarily transform electrical energy into**

Topic: : **ENERGY & ITS FORMS**

ESSENTIAL QUESTION: **How is mass and height of an object related with its potential energy?**

What happens to the kinetic energy of an object when its velocity doubled?

LEARNING TARGETS:

I can define potential &kinetic energy

I can analyze an energy form in a scenario and calculate for the appropriate form of energy

I can infer the type of energy associated with varied real life situations

And answer a question like this:

A cool piece of iron gets warm when a red-hot piece of iron is placed a few inches away. How is heat transferred in this scenario?

A. The red-hot iron emits thermal radiation that is absorbed by the cool iron.

B. Convection currents in the air transfer all of the heat from the red-hot iron to the cool iron.

C. High-energy particles escape from the red-hot iron and collide with cool iron.

D. The air between the two pieces of iron emits thermal radiation

Agenda

Catalyst	8 min
Unit test - Energy	40min
Practice – Thermal energy calculations	Remaining time
Weight calculations	
Exit	5min

Wednesday
October 09,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 10/14

USA test prep practice – heat transfer – 10/08

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

1. **In _____ heat is transferred when molecules *collide* and transfer energy from hot to cold**
2. **_____ is a type of heat transfer that *doesn't require matter* to move through**
3. **_____ are created when hot fluid *rises* and cold fluid *sinks***

Topic: : **ENERGY & ITS FORMS**

ESSENTIAL QUESTION: How are conductors different from insulators? Explain your answer giving at least two examples in each category.

LEARNING TARGETS:

I can define potential &kinetic energy

I can analyze an energy form in a scenario and calculate for the appropriate form of energy

I can infer the type of energy associated with varied real life situations

And answer a question like this:

A cool piece of iron gets warm when a red-hot piece of iron is placed a few inches away. How is heat transferred in this scenario?

A. The red-hot iron emits thermal radiation that is absorbed by the cool iron.

B. Convection currents in the air transfer all of the heat from the red-hot iron to the cool iron.

C. High-energy particles escape from the red-hot iron and collide with cool iron.

D. The air between the two pieces of iron emits thermal radiation

Agenda

Catalyst	8 min
Unit test - Energy	40min
Practice – Thermal energy calculations	Remaining time
Weight calculations	
Exit	5min

Thursday
October 10,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 10/14

Quiz – Heat transfer &conversion – 10/11

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

1.the transfer of heat due to circulation which is based on changing densities is -

2. the transfer of heat energy from one solid that is in contact with another solid is ---------

3. the transfer of heat from one to location another through the movement of fluids can be ---- or ----

4. the transfer of heat through electromagnetic waves which does not involve the movement of Matter is ----------

Topic: : **ENERGY & ITS FORMS**

ESSENTIAL QUESTION: How does the *molecular motion* changes with the absorption of thermal energy? What term is used for measuring the amount of thermal energy?

LEARNING TARGETS:

I can define potential &kinetic energy

I can analyze an energy form in a scenario and calculate for the appropriate form of energy

I can infer the type of energy associated with varied real life situations

And answer a question like this:

A cool piece of iron gets warm when a red-hot piece of iron is placed a few inches away. How is heat transferred in this scenario?

A. The red-hot iron emits thermal radiation that is absorbed by the cool iron.

B. Convection currents in the air transfer all of the heat from the red-hot iron to the cool iron.

C. High-energy particles escape from the red-hot iron and collide with cool iron.

D. The air between the two pieces of iron emits thermal radiation

Agenda

Catalyst	8 min
Unit test - Energy	40min
Practice – Thermal energy calculations	Remaining time
Weight calculations	
Exit	5min

Friday
October 11,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 10/14

Quiz – Heat transfer &conversion – 10/11

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

1.To power an elevator, a motor must convert electrical energy into -------

2.Moving water can be used to produce electrical energy because---

3.The coil on a stove heats up and emits electromagnetic waves is -----

4.Boiling water near the bottom of a pot rises and cool water sinks is ------

Topic: : **ENERGY & ITS FORMS**

ESSENTIAL QUESTION: What is specific heat? Write the equation and explain the relation between heat & mass, heat &temperature, mass &temperature, mass and specific heat

LEARNING TARGETS:

I can define potential &kinetic energy

I can analyze an energy form in a scenario and calculate for the appropriate form of energy

I can infer the type of energy associated with varied real life situations

And answer a question like this:

A cool piece of iron gets warm when a red-hot piece of iron is placed a few inches away. How is heat transferred in this scenario?

A. The red-hot iron emits thermal radiation that is absorbed by the cool iron.

B. Convection currents in the air transfer all of the heat from the red-hot iron to the cool iron.

C. High-energy particles escape from the red-hot iron and collide with cool iron.

D. The air between the two pieces of iron emits thermal radiation

Agenda

Catalyst	8 min
Unit test - Energy	40min
Practice – Thermal energy calculations	Remaining time
Weight calculations	
Exit	5min

Tuesday
October 15,2019

NOTES – Remediation – unit-1-remediation – usa test prep – 10/14

Quiz – Heat transfer &conversion – 10/11

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

Draw the triangle equation for *specific heat*

Write the relation between specific heat and change in temperature.

A 111.6 g sample of iron was heated from 0°C to 20°C. It absorbed 1004 J of energy. What is the specific heat capacity of iron?

Topic: : **Phase changes**

ESSENTIAL QUESTION: How are the molecules in a solid arranged differently from that of a liquid and a gas? (may draw illustrations)

LEARNING TARGETS:

I can list and define the phase changes.

I can draw and label a phase change diagram.

I can draw and label a heating or cooling curve.

I can explain what a heating/cooling curve shows.

And answer a question like this:

A cool piece of iron gets warm when a red-hot piece of iron is placed a few inches away. How is heat transferred in this scenario?

A. The red-hot iron emits thermal radiation that is absorbed by the cool iron.

B. Convection currents in the air transfer all of the heat from the red-hot iron to the cool iron.

C. High-energy particles escape from the red-hot iron and collide with cool iron.

D. The air between the two pieces of iron emits thermal radiation

Agenda

Catalyst	8 min
Unit test - Energy	40min
Practice – Thermal energy calculations	Remaining time
Weight calculations	
Exit	5min

Wednesday
October 16,2019

NOTES Remediation Unit-1- USA test prep – Due – 10/14

Unit-Test – Energy& phase changes – 10/18

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST: draw & label the graph

1.What state of matter exists during the horizontal portions of the graph?

2.Which segments indicate the release of energy and a phase change taking place

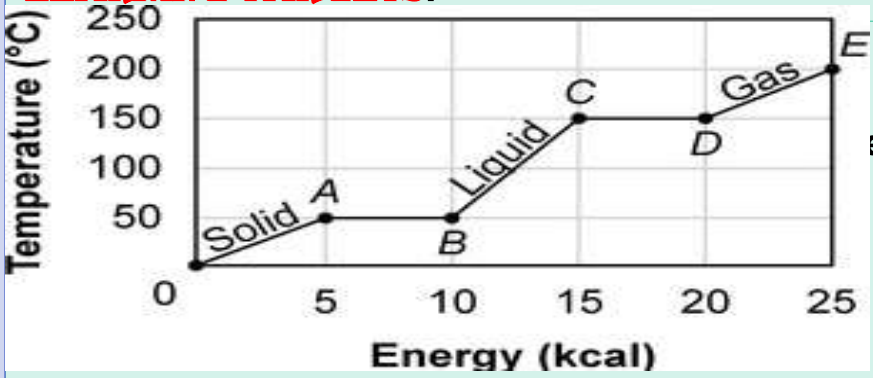
3.Which segments indicate an absorption of energy and a phase change taking place?.

Topic: **Phase changes**

ESSENTIAL QUESTION: How *is exothermic* reactions different from *endothermic* reactions?

Name *the phase changes* which are exothermic and endothermic.

LEARNING TARGETS:



And answer a question like this:

Amina places a stainless steel spoon in a cup of hot coffee, as shown in the picture.
How does the motion of the atoms in the spoon change when the spoon is placed in the hot coffee?

A. The atoms vibrate faster due to the conduction of heat through atoms in the spoon.
B. The atoms vibrate slower due to the conduction of heat through atoms in the spoon.
C. The atoms move closer toward each other due to the radiation of heat through atoms in the spoon.
D. The atoms move away from each other due to the convection of heat through atoms in the spoon.

Agenda

Catalyst	8 min
Unit test - Energy	40min
Edpuzzle videos – Introduction to waves	Remaining time
Weight calculations	
Exit	5min

Thursday
October 17,2019

NOTES – Remediation Unit-1- USA test prep – Due – 10/14

Unit-Test – Energy& phase changes – 10/18

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

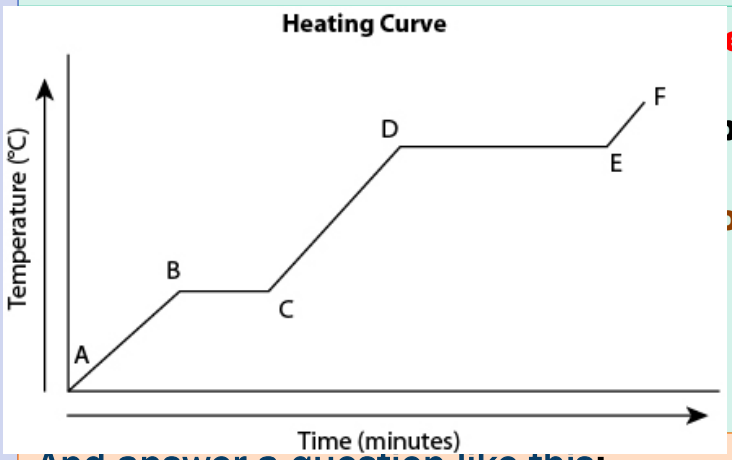
1. **Draw the phase change diagram to the right**
2. **Label the segments A-B, B-C, C-D, D-E & F-F with the appropriate state of matter.**
3. **Label the points B, C, D & E with the names for the appropriate phase change process**
4. **Give an example of exothermic and an endothermic process in the diagram.**

Topic: **Phase Changes**

EQ – What happens to the temperature during the horizontal segments in a phase change diagram?

How is a heating curve different from a cooling curve?

LEARNING TARGETS:



ergy

propriate

ociated

And answer a question like this:

Which best describes heat from radiation?

A. Heat from a stove coil transfers to a pot placed on top of it.

B. The coil on a stove heats up and emits electromagnetic waves.

C. Heat from the metal handle of a pot transfers to a person's hand.

D. Boiling water near the bottom of a pot rises and cool water sinks.

Agenda

Catalyst	8 min
Waves – Videos 1&2	40min
Test correction – unit-2	Remaining time
Exit	5min

Friday
October 18,2019

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST: Carter is going camping outside. He wants to bring a frying pan that will heat up and cool down quickly. The picture shows the frying pans Carter could use.

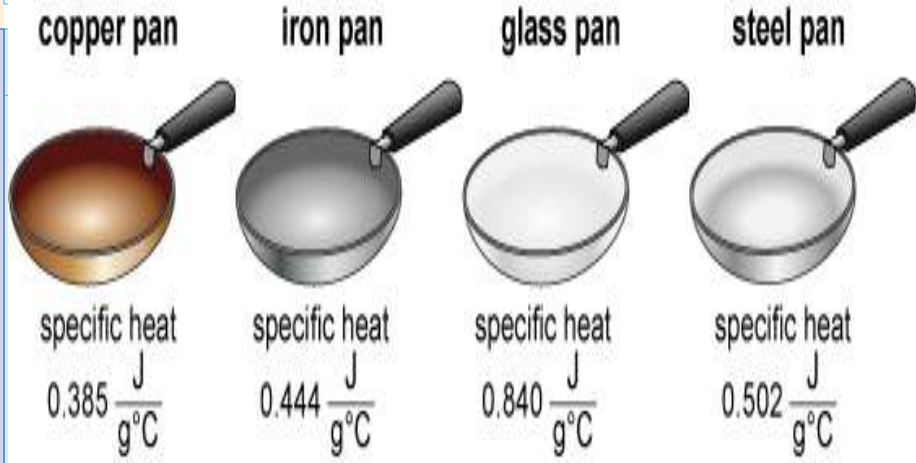
a) **Define a conductor and an insulator**
b) **Write the specific heat equation**
c) **How is heat in the above equation related with specific heat?**
d) **How is specific heat related with conductivity & insulation?**
e) **Which pan would he use for the purpose stated in the scenario?**

Topic: **Phase Changes**

EQ – What phase changes does a heating and a cooling curve show? How is heat energy associated with the above changes?

NOTES – Remediation Unit-1- USA test prep – Due – 10/14

Unit-Test – Energy& phase changes – 10/18



And answer a question like this:

Which best describes heat from radiation?

A. Heat from a stove coil transfers to a pot placed on top of it.
B. The coil on a stove heats up and emits electromagnetic waves.
C. Heat from the metal handle of a pot transfers to a person's hand.
D. Boiling water near the bottom of a pot rises and cool water sinks.

Agenda

Catalyst	8 min
Waves – Videos 1&2	40min
Test correction – unit-2	Remaining time
Exit	5min

Monday
October 21,2019

NOTES – Formative – Waves – 10/24

Unit-Test – Energy& phase changes – 10/18

SPS9. Obtain, evaluate, and communicate information to explain the properties of waves.

CATALYST: Write the equation for specific heat and solve the following.

In a small aquarium, the heater transfers 110,000 J of heat to 5500 g of water. How much did the temperature of the water rise? (c for water = 4.186j/g0c)

Topic: **wave characteristics**

EQ : How is a *mechanical wave* different from an *electromagnetic wave?* Explain your answer giving examples.

LEARNING TARGETS:

I can identify different types of waves

I can analyze and interpret data to identify the relation ship among wavelength &frequency

I can analyze and interpret data to identify the relation between energy and the amplitude of waves

And answer a question like this:

If a wave is traveling at a certain speed and the frequency is increased, what will happen to its wavelength?

A. The wavelength will increase.

B. The wavelength will produce a standing wave.

C. The wavelength will remain the same.

D. The wavelength will decrease.

Agenda

Catalyst	8 min
Opener – pre assessment –waves- illuminate - waves	Whole class time
Direct instruction – cloze notes &ppt-1	
Work period - stations	Remaining time
Exit- questions	5min

Tuesday
October 22,2019

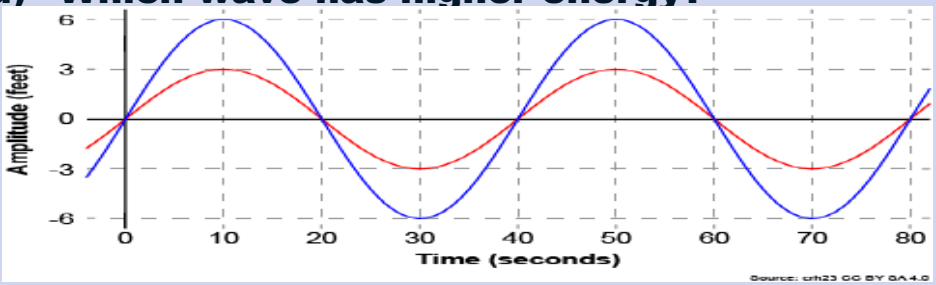
NOTES – Formative – Waves – 10/24

Unit-remediation – Energy& phase changes – 10/28

SPS9. Obtain, evaluate, and communicate information to explain the properties of waves.

CATALYST: Analyze the graph below of a water wave. Answer the following

a) **Name the X and Y Axis**
b) **What does the amplitude of a wave measure?**
c) **How is amplitude of a wave related with its energy.**
d) **Which wave has higher energy?**



Topic: **wave characteristics**

How are longitudinal waves different from transverse waves?

What is a characteristic common to sound waves and light waves?

LEARNING TARGETS:

I can identify different types of waves

I can analyze and interpret data to identify the relation ship among wavelength &frequency

I can analyze and interpret data to identify the relation between energy and the amplitude of waves

And answer a question like this:

Which is NOT correct about waves?

A. Waves travel through a medium.

B. Wave energy come from vibrations.

C. Waves transfer matter and not energy.

D. Waves transfer energy and not matter.

Agenda

Catalyst	8 min
Opener- wave image – identify the parts	10 min
Direct I – PPt &cloze text –nature of ligh	
Work period - stations	Remaining time
Closing – making sound probe	5min

Wednesday
October 23,2019

NOTES **Formative – Waves – 10/24**

Unit-remediation – Energy& phase changes – 10/28

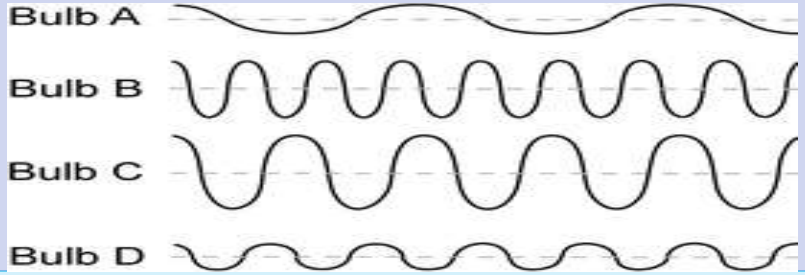
SPS9. Obtain, evaluate, and communicate information to explain the properties of waves.

CATALYST: The figure below represents the light waves generated by four differently colored bulbs.

a) **Define frequency**

b) **Write the wave equation &explain how frequency is related with the wavelength**

c)Which bulb produces a wave with the highest frequency?



Topic: **wave characteristics**

How is wavelength different from frequency? What units are used for measuring them.

LEARNING TARGETS:

I can identify different types of waves

I can analyze and interpret data to identify the relation ship among wavelength &frequency

I can analyze and interpret data to identify the relation between energy and the amplitude of waves

And answer a question like this:

You can see this projector, your book bag, and the posters in front of you because light is being _____

A. reflected

B. refracted

C. diffracted

D. constructively interfered

E. destructively interfered

Agenda

Catalyst	8 min
PPT – Wave - Behaviors	30 min
reinforcement – wave behaviors	Remaining time
Complete the Stations	
Exit	5min

Thursday
October 24,2019

NOTES – Formative – Waves – 10/24

Unit-remediation – Energy& phase changes – 10/28

Unit test – Wave properties – 10/28

SPS9. Obtain, evaluate, and communicate information to explain the properties of waves.

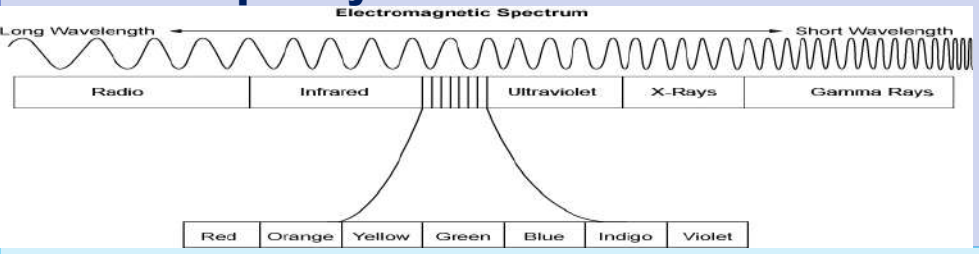
CATALYST:

a)What is an Electromagnetic spectrum?

b)How is an electromagnetic wave different from mechanical wave?

c) Analyze the diagram below and derive a relation between the wavelength and the frequency

d)Arrange the radiations from highest to the lowest frequency.



Topic: **Electromagnetic spectrum**

EQ - How is energy of a wave related with its frequency? Name three radiations with the lowest energy.

LEARNING TARGETS:

I can identify different types of waves

I can analyze and interpret data to identify the relation ship among wavelength &frequency

I can analyze and interpret data to identify the relation between energy and the amplitude of waves

And answer a question like this:

If a wave is traveling at a certain speed and the frequency is increased, what will happen to its wavelength?

A. The wavelength will increase.

B. The wavelength will produce a standing wave.

C. The wavelength will remain the same.

D. The wavelength will decrease.

Agenda

Catalyst	8 min
Formative - waves	20 min
Virtual lab – electromagnetic waves	Remaining time
Doppler effect phenomena	
Exit	5min

Friday
October 25,2019

NOTES – Formative – Waves – 10/24
Unit-remediation – waves– 10/25
Unit test – Wave properties – 10/28

SPS7. Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.

CATALYST:

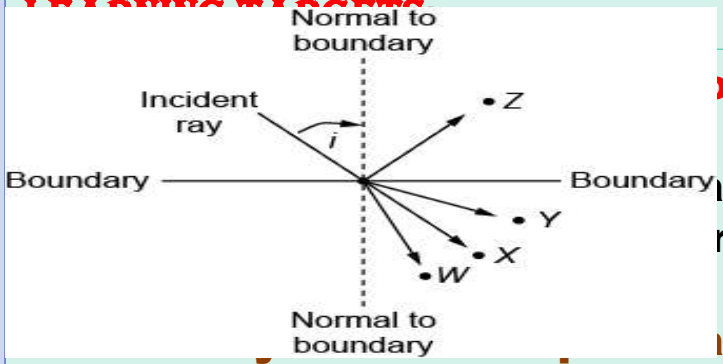
The speed of the ray increases as it crosses the boundary in the diagram

1. Is the wave in the picture a sound or light wave?

1.What is the path of the ray in the new medium. How do you know?

2.Order the mediums from the fastest to the slowest.

3.What is this phenomenon called?



identify the relation between energy and the amplitude of waves

And answer a question like this:

The driver of a car hears the siren of an ambulance that is moving away from her. If the actual frequency of the siren is 2000 hertz, which frequency was heard by the driver?

A. 1900 Hz
B. 2000 Hz
C. 2100 Hz
D. 4000 Hz

Topic: **Wave Characteristics**

Write the wave equation. Give the relation between

a) **Wavelength &frequency**
b) **Velocity/speed & wavelength**
c) **Velocity/speed & frequency**
d) **Frequency and energy**
e) **Amplitude & energy**

Agenda

Catalyst	8 min
Glencoe lab – Electromagnetic radiations	40min
Independent practice – EM &Doppler effect	Remaining time
Weight calculations	
Exit	5min

Monday
October 28,2019

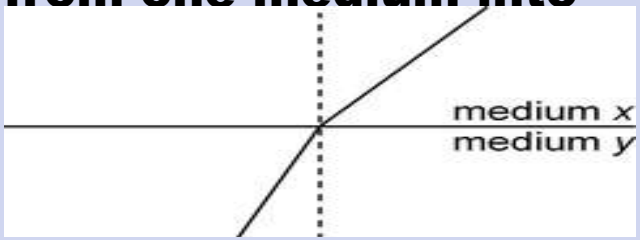
NOTES –Unit-remediation – waves– 10/25

Unit test – Wave properties – 10/28

SPS9. Obtain, evaluate, and communicate information to explain the properties of waves.

CATALYST:

The diagram represents a light ray passing from one medium into another.



1. **What is a medium**
2. **Which medium is denser? How do you know?**
3. **What happens to the speed as light enters from X to Y**

Topic: **wave characteristics**

How are energy and wavelength related? In the visible spectrum which color is the most energetic one?

LEARNING TARGETS:

I can identify different types of waves

I can analyze and interpret data to identify the relation ship among wavelength &frequency

I can analyze and interpret data to identify the relation between energy and the amplitude of waves

And answer a question like this:

Microwave ovens are used in both restaurants and homes to heat and cook food quickly. Occasionally, the ovens do not heat food evenly. Which wave behavior would best explain this uneven heating?

A. diffraction

B. the Doppler effect

C. resonance

D. interference

Agenda

Catalyst	8 min
Waves – Study Guide	Whole class time
Waves – USA test prep practice	Remaining time
Exit	5min

Tuesday
October 29,2019

NOTES – Unit-remediation – waves– 10/25

Unit test – Wave properties – 10/28

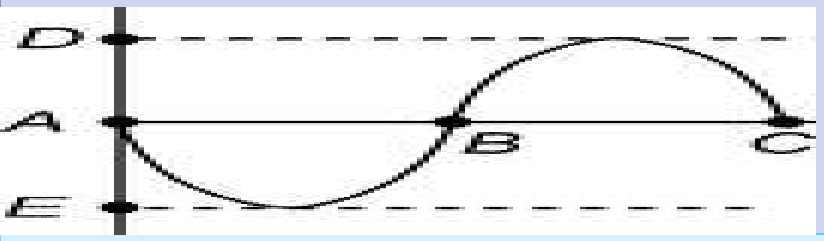
SPS9. Obtain, evaluate, and communicate information to explain the properties of waves.

CATALYST:

a) **What is Doppler effect?**

b) **How does the frequency of sound effect its pitch/loudness?**

c)The diagram represents the motion of a sound wave. The distance between points *A* and *C* is 12meters (m), and it initially takes the wave 3seconds (s) to travel. What will be the wavelength if the pitch is increased 4 times?



Topic:: **Doppler effect**

EQ - How is constructive interference different from destructive interference?

Draw a Venn diagram to differentiate

LEARNING TARGETS:

I can identify different types of waves

I can analyze and interpret data to identify the relation ship among wavelength &frequency

I can analyze and interpret data to identify the relation between energy and the amplitude of waves

And answer a question like this:

Which combination of characteristics produces the least energetic waves?

A. long wavelength, low frequency

B. long wavelength, high frequency

C. short wavelength, low frequency

D. short wavelength, high frequency

Agenda

Catalyst	8 min
Intro – Electricity – Power point	50 min
Practice – Ohms Law	Remaining time
Exit	5min

Wednesday
October 30,2019

NOTES – Unit-remediation – waves– 11/05

Unit test – Wave properties – 10/28

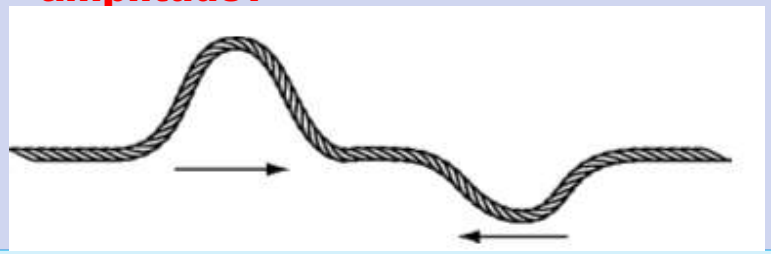
SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism

CATALYST:

a) **What wave property is observed in the diagram below?**

b) **Which two parts of the wave will meet at a point?**

c) **How will it effect the resulting wave amplitude?**



Topic:: **Electricity**

EQ – What type of waves are sound waves?

How does the property of medium effect these waves?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

Which combination of characteristics produces the least energetic waves?

A. long wavelength, low frequency

B. long wavelength, high frequency

C. short wavelength, low frequency

D. short wavelength, high frequency

Agenda

Catalyst	8 min
Intro – Electricity – Power point	50 min
Practice – Ohms Law	Remaining time
Exit	5min

Thursday
October 31,2019

NOTES – Unit-remediation – waves– 11/05

Unit test – Wave properties – 10/28

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism

CATALYST:

a) **What does the rule of charge state?**

b) **What will happen when a atom lose one or more electrons and vice versa?**

c) **How is a transverse wave different from longitudinal wave?**

Topic:: **Electricity**

EQ – How is voltage and current related?

What units are used for measuring the above two quantities?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

Which combination of characteristics produces the least energetic waves?

A. long wavelength, low frequency

B. long wavelength, high frequency

C. short wavelength, low frequency

D. short wavelength, high frequency

Agenda

Catalyst	8 min
Intro – Electricity – Power point	50 min
Practice – Ohms Law	Remaining time
Exit	5min

Friday
November 1,2019

NOTES – Unit-remediation – waves– 11/05

Formative– Electricity– 11/04(practice – quizziz –Homework)

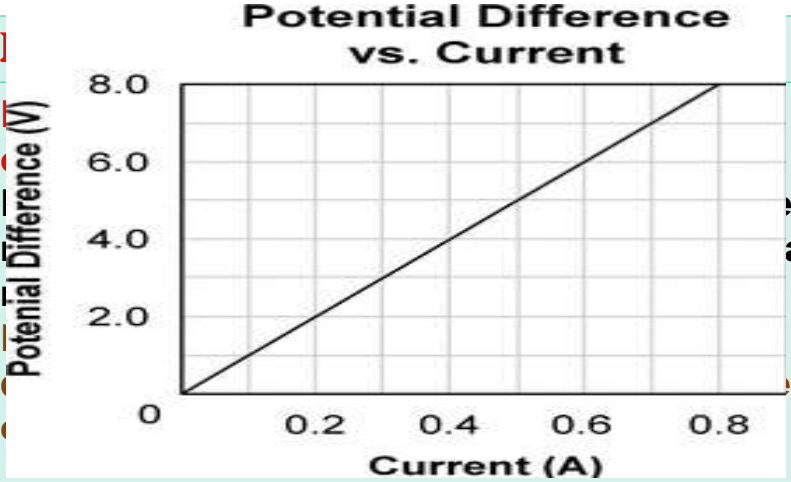
SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism

CATALYST: Draw the graph to the right

a) What variables are shown?

b) How does current change as the potential difference changes? Another name for the potential difference is -----

c) What is the resistance of the material shown in the picture?



And answer a question like this:

What happens to the current flowing through a circuit as resistance increases?

A. It decreases.

B. It stays the same.

C. It reverses direction.

D. It increases.

Topic:: **Electricity**

EQ – Write the Ohms law equation?

How is V&I, V &R &I&R relate in the above equation?

Agenda

Catalyst	8 min
Intro – Electricity – Power point finish	50 min
Practice – Ohms Law &virtual lab	Remaining time
Exit	5min

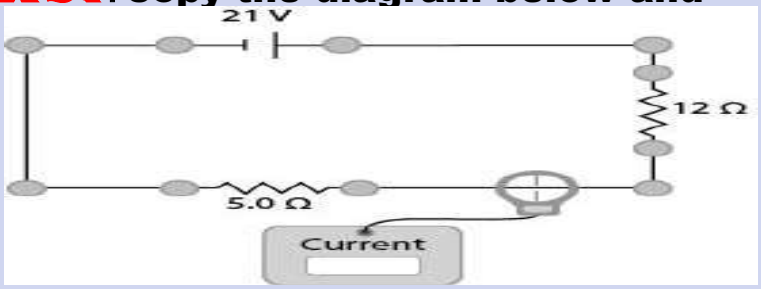
Monday
November 04,2019

NOTES – Unit-remediation – waves– 11/05

Formative– Electricity– 11/04(practice – quizziz –Homework)

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST: copy the diagram below and answer,



a. **Write the Ohms Law equation**
b. **How are voltage & current related?**
c. **How are current and resistance related?**
d. **Name the device used for measuring current? Calculate the current in the above circuit**

Topic: **Electricity**

EQ – How is static electricity different from current electricity? Explain giving an example for each type

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

If the potential difference across a 30.0-ohm resistor is 10.0 volts, what is the current through the resistor?

A. 0.25 A

B. 0.33 A

C. 0.50 A

D. 3.0 A

Agenda

Catalyst	8 min
Reinforcement- Circuits	30 min
Practice– Circuits	Remaining time
Phet Lab - Circuits	
Exit	5min

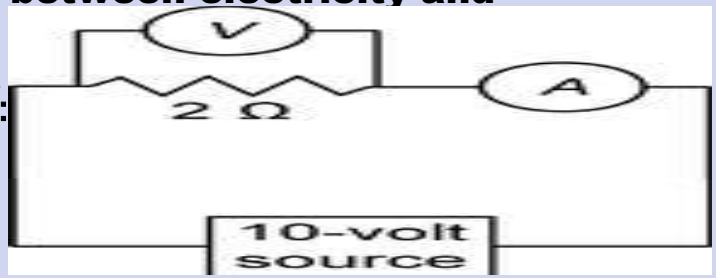
Wednesday November 06,2019

NOTES – Unit-remediation – waves– 11/10

Formative– Electricity– 11/07(practice – USA test prep –Homework)

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:



a) **Copy the circuit diagram above**
b) **What type of circuit is it?**
c) **What is the voltage source in a circuit called?**
d) **Write the Ohms Law equation and solve for the current in the Ammeter in the circuit?**

Topic: **electricity**

EQ – What are resistors?

Name three factors that can affect the resistance?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity
I can use mathematical skills to derive relationship between current, voltage and resistance
I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

A uniform copper wire has a resistance of 100ohms. The wire is cut into 10 equal lengths. What is the resistance of each piece?

A. 1 ohm
B. **10 ohms**
C. 100 ohms
D. 1000 ohms

Agenda

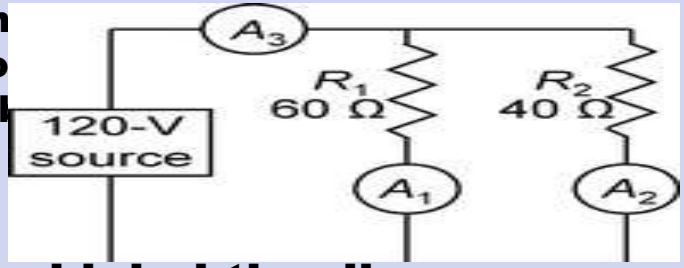
Catalyst	8 min
Video – Types of circuits	30 min
Reinforcement – Circuit diagrams	Remaining time
Exit	5min

Thursday
November 07,2019

NOTES – Unit-remediation – waves– 11/10

Formative– Electricity– 11/07(practice – USA test prep –Homework)

SPS10. Obtain information to relationships l magnetism.



CATALYST:

a)Sketch and label the diagram

b)What type of circuit is it?

c) How much current does the resistors R1 & R2 receive?

d)What does potential difference refers to?

e)If a third resistor were connected in parallel to this circuit what would be the potential difference across it?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

A uniform copper wire has a resistance of 100ohms. The wire is cut into 10 equal lengths. What is the resistance of each piece?

A. 1 ohm

B. **10 ohms**

C. 100 ohms

D. 1000 ohms

Topic: **electricity**

EQ – How is current and voltage in a *series* circuit different from that of a *parallel* circuit?

Agenda

Catalyst	8 min
PPT & Graphic organizer – Atomic structure	50 min
USA test prep – electricity review	Remaining time
Reinforcement – Atomic structure	
Exit	5min

Friday
November 08,2019

NOTES – Unit-remediation – waves– 11/10

Formative– Electricity– 11/07(practice – USA test prep –Homework)

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:

Write the ohm law equation with the units and solve the following problem

A 220.0-ohm resistor is connected to a 3.00-volt battery. What is the current through the resistor?

Topic: **electricity**

EQ – What is a *circuit*? Name the *types of circuits*? Write any *three differences* between the types of circuits?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

If the potential difference across a 30.0-ohm resistor is 10.0 volts, what is the *current* through the resistor?

A. 0.25 A

B. 0.33 A

C. 0.50 A

D. 3.0 A

Agenda

Catalyst	8 min
Quiz - Electricity	20 min
Intro- Atomic Structure	Remaining time
Exit	5min

Monday
November 11,2019

NOTES – Formative – atoms & PT(11/14)

recovery – Electricity & magnetism – USA test prep – Due by 11/15

GPS -

SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

An element has a mass number 19 and has10 neutrons.

a. **Write a mathematical expression for the mass number**
b. **How do you find the proton number using the above formula and the given information?**
c. **What number can identify an element?**
d. **Identify the element in the question**

Topic: **Atomic Structure**

ESSENTIAL QUESTION: Why is mass number of an element always greater than its atomic number?

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

And answer a question like this:

How does a H-3 atom different from H-1

a. **H-3 has more protons than H-1**
b. **H-3 has fewer protons than H-1**
c. **H-3 has more neutrons than H-1**
d. **H-3 has fewer neutrons than H-1**

Agenda

Catalyst	8 min
Practice – atomic structure &isotopes	Whole time
Exit	5min

Tuesday
November 12,2019

NOTES – Formative – atoms & PT(11/14)

recovery – Electricity & magnetism – USA test prep – Due by 11/15

GPS -

SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

a. How is O-16 different from O-18

b. What does the number after the dash signifies in the above notations?

c. Using the periodic table find the number of subatomic particles of both atoms.

Topic: **Periodic table**

ESSENTIAL QUESTION: Given the isotopic notation how do you find the number of protons and neutrons of that isotope?

Find the above two information for Nitrogen – 15.

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

And answer a question like this:

The nucleus of an atom is surrounded by

A. a neutron cloud.

B. an electron cloud.

C. rings of orbiting protons.

D. rings of orbiting neutrons.

Agenda

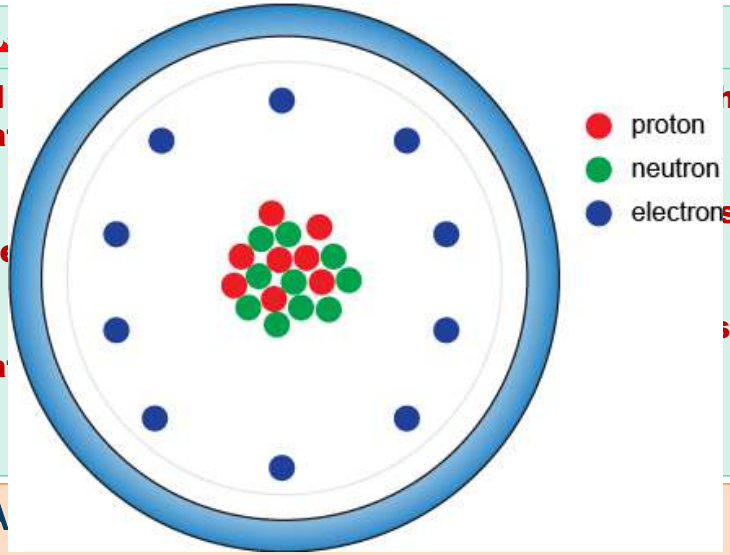
Catalyst	8 min
Introduction to periodic table	40min
Reinforcement periodic table	Remaining time
Exit	3min

Wednesday
November 13,2019

NOTES – Summative – atoms & PT(11/18) (Study guide – Quizziz)
recovery – Electricity & magnetism – USA test prep – Due by 11/15

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:
Red – Proton, Green – Neutron, blue - electron
a. Identify the element to the right
b. How do you turn this atom into a positive ion?
c. How do you make an isotope of the atom to the right.
d. What will happen if you add a proton to it.



Topic: **Periodic table**
ESSENTIAL QUESTION: How is a neutral atom different from its ion?
Explain your answer giving an example.

An element's periodic table identity is defined by its number of
a neutron
b. electron
A. protons.
D. ions

Agenda

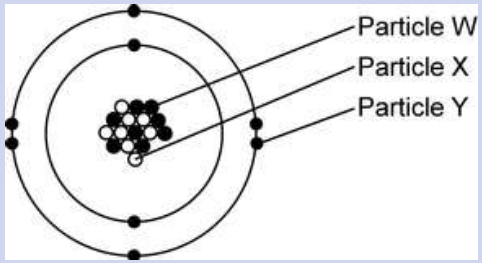
Catalyst	8 min
Introduction to periodic table	40min
Reinforcement periodic table	Remaining time
Exit	3min

Thursday
November 14,2019

NOTES – Summative – atoms & PT(11/18) (Study guide – Quizziz) recovery – Electricity & magnetism – USA test prep – Due by 11/15

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:



a) **Which particle can be used to identify the atom?**
b) **What is the identity of the above element?**
c) **What will happen to the above atom if it gains two electrons? Will it still be neutral?**

Topic: **Periodic Table & Atomic models**

ESSENTIAL QUESTION: How is an ion different from a neutral atom? Name the types of ions.

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

And answer a question like this:

How does a H-3 atom different from H-1

a. **H-3 has more protons than H-1**
b. **H-3 has fewer protons than H-1**
c. **H-3 has more neutrons than H-1**
d. **H-3 has fewer neutrons than H-1**

Agenda

Catalyst	8 min
Project - Introduction to periodic table	40min
Independent practice – periodic table	20min
Lewis Dot Structures	30min
Exit	

Friday
November 15,2019

NOTES – Summative – atoms & PT(11/18) (Study guide – Quizziz) recovery – Electricity & magnetism – USA test prep – Due by 11/15

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

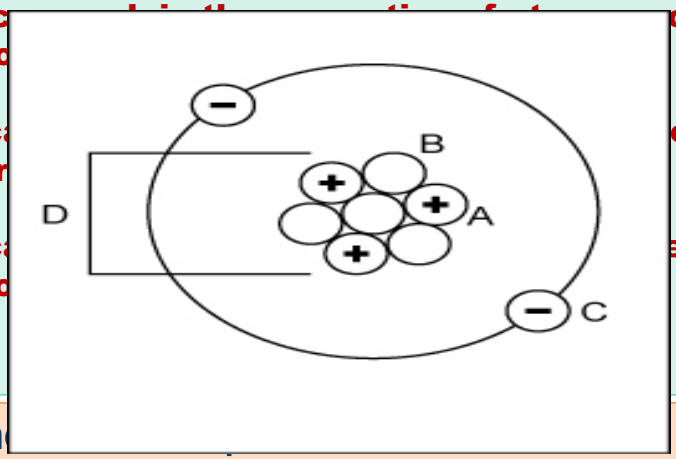
1. Draw and Label the diagram to the right
2. Which particle can be used to identify the atom?
3. What is the identity of the above element? Is it an ion or a neutral atom?
4. What is the net charge of this atom?

Topic: **Periodic Table & Atomic models**

ESSENTIAL QUESTION: How is C-14 different from C-12?

LEARNING TARGETS:

I c ch s
ato
I c es in
ter
I c es of
ato



An

How does a H-3 atom different from H-1

a. **H-3 has more protons than H-1**
b. **H-3 has fewer protons than H-1**
c. **H-3 has more neutrons than H-1**
d. **H-3 has fewer neutrons than H-1**

Agenda

Catalyst	8 min
Project - Introduction to periodic table	40min
Independent practice – periodic table	20min
Lewis Dot Structures	30min
Exit	

Monday
November 18,2019

NOTES – Summative – atoms & PT(11/18) (Study guide – Quizziz) recovery – Electricity & magnetism – USA test prep – Due by 11/15

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

1. **What are ions?**
2. **Describe an atom with a negative net charge?**
3. **Describe an atom with a positive net charge?**
4. **Give examples of atoms with a net charge of 1+, 2+, 3+ and 3-, 2- and 1- (Just one example for each charge)**

Topic: **Periodic table**

ESSENTIAL QUESTION: What are valence electrons? How do you relate the valence electrons to the group numbers?

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

And answer a question like this:

Which element is a noble gas

a. **Sodium**
b. **Xenon**
c. **Carbon**
d. **Tellurium**

Agenda

Catalyst	8 min
Project - Getting to know the periodic table	40min
Independent practice – periodic table	20min
Exit	

Tuesday
November 19,2019

NOTES – Summative – atoms & PT(11/18) (Study guide – Quizziz)
USA test prep – atoms/periodic table – due – 11/19

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

1. **What are valence electrons?**
2. **Use the periodic table to find the valence electrons for**

c) Br b) N c) Xe d) Sr e) Cs

3) Categorize the following as metals, non - metals or metalloids

a) Germanium b) Indium c) Selenium

Topic: **Periodic table**

ESSENTIAL QUESTION: How are metals different from non metals? (Any 3 differences)

How do you categorize a substance which has shiny appearance and brittle in nature?

LEARNING TARGETS:

I can identify the valence electrons based on the location of an element

I can differentiate metals from non metals and metalloids

I can relate an elements period number to its energy levels

And answer a question like this:

What is the symbol for an aluminum ion?

A. Al
B. Al^{3+}
C. Al^{3-}
D. Al_3

Agenda

Catalyst	8 min
Introduction to bonding - Notes	50min
Reinforcement bonding	20min
Exit	5min

Wednesday
November 20,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED.

GPS -

SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

1. **What are ions? What do atoms do in order to form ions?**
2. **Use the periodic table to find the type of ions for the following atoms**

a) Br b) N c) Xe d) Sr e) Cs

3) How do you categorize the above atoms into metals/non metals from their ion charges?

Topic: **Periodic table**

ESSENTIAL QUESTION: Why do atoms turn into ions?

What type of elements form positive ions and why?

What type of elements form negative ions and why?

LEARNING TARGETS:

I can identify the valence electrons based on the location of an element

I can differentiate metals from non metals and metalloids

I can relate an elements period number to its energy levels

And answer a question like this:

What is the symbol for an aluminum ion?

A. Al

B. Al^{3+}

C. Al^{3-}

D. Al_3

Agenda

Catalyst	8 min
Practice – bonding – naming &writing formulas	Whole class
Kahoot -review	20min
Exit	5min

Thursday
November 21,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED

GPS -

SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

1. **How are positive ions different from negative ions?**
2. **Use the periodic table to find the type of ions for the following atoms**

a) Mg b) In c) Kr d) P e) F

3) Categorize the above atoms into metals/non metals based on their charges?

Topic: **Periodic table**

ESSENTIAL QUESTION: Why do metals lose electrons?

Show the Bohr's structure for neutral sodium atom and its ion and explain why Na ion is considered stable comparing to Na atom?

LEARNING TARGETS:

I can identify the valence electrons based on the location of an element

I can differentiate metals from non metals and metalloids

I can relate an elements period number to its energy levels

And answer a question like this:

What is the symbol for an Sodium ion?

A. Na

B. Na^{1+}

C. Na^{1-}

D. Na_1

Agenda

Catalyst	8 min
Summative – Atomic structure, Bonding &periodicity	60min
Kahoot -review	20min
Exit	5min

Friday
November 22,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED

GPS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

a. **Which chemical formula, NaCl or CO_2 represents a covalent compound and why?**
b. **What do magnesium and chlorine react to form? Write the formula**
c. **Identify the type, Write the formula/Name**

NaBr, Dicarbon tetroxide, Strontium Iodide, CO, Barium Oxide, Cl_2O

Topic: **Bonding**

ESSENTIAL QUESTION: How are ionic compounds different from covalent?

Identify as ionic/covalent

NO, AlP, CsBr, $MgCl_2$, PCl_3, In_2S_3, SO_2

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can differentiate between ionic and covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

What is the formula for the compound formed when a potassium ion (K+) and a sulfide ion (S2-) unite?

A. KS
B. K_2S
C. KS_3
D. KS_2

Agenda

Catalyst	8 min
Introduction to bonding	40min
Independent practice bonding	40min
Exit	

Monday
December 02,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED

GSS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

1. Paul made a list about alkaline earth metals.

- **gain two electrons**
- **are found in group two**
- **ions will be negative two**
- **include elements Be, Mg, Ca**

Fid the mistakes Paul made?

2. What are the group/family names for the 1st, 16th, 17th &18thgroups?

Topic: **Bonding**

ESSENTIAL QUESTION: How do *valence electrons* determine the reaction between *sodium and chlorine*? Write the *formula* between these two elements.

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can differentiate between ionic and covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

Which of the following is the correct name for the molecular compound N2O4?

A. nitric oxide

B. nitrogen (II) oxide

C. dinitrogen tetroxide

D. binitrogen quadoxide

Agenda

Catalyst	8 min
Summative – Atoms, periodic table &bonding	50min
Reading – Balancing reactions	30min
Exit	3min

Tuesday
December 03,2019

GPS - SPS3. Obtain, evaluate, and communicate information to support the Law of Conservation of Matter..

CATALYST: Look at the following equation.

__Au_2O_3 → __Au + __O_2

1. **Does this equation follow the Law of conservation of mass?**
2. **What coefficients will help it to obey the Law of conservation of mass?**
3. **How many atoms of Au and O are in the reactant after the coefficient is added?**
4. **How many atoms of Au and O are in the products after the coefficient is added?**
5. **What type of reaction is it?**

Topic: **Balancing & Types of reactions**

ESSENTIAL QUESTION: How is single replacement reaction different from double replacement? Explain your answer giving an example for each type.

LEARNING TARGETS:

I can use mathematical &computational skills to claim that mass is conserved during a chemical reaction

I can predict the type of a reaction by analyzing an equation

I can balance and predict the type of reactions

And answer a question like this:

Match the missing coefficient to the correct number of molecules so that the equation adheres to the conservation of mass.

X **Ag_2O +** ***Y*** **Ag +** ***Z*** **O_2**

Agenda

Catalyst	10 min
Reading reactions & Balancing	20min
Formative – Reactions &Balancing	Remaining time
Quizziz – reactions & balancing	practice
Exit	5min

Wednesday
December 04,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED

GSE - SPS3. Obtain, evaluate, and communicate information to support the Law of Conservation of Matter..

CATALYST: Look at the following equation.

----- Fe + ----O_2 ---→ Fe_2O_3

1. **Does this equation follow the Law of conservation of mass?**
2. **What coefficients will help it to obey the Law of conservation of mass?**
3. **How many atoms of Fe and O are in the reactant after the coefficient is added?**
4. **How many atoms of Fe and O are in the products after the coefficient is added?**
5. **What type of reaction is it?**

Topic: **Balancing & Types of reactions**

ESSENTIAL QUESTION: How is synthesis reaction different from decomposition? Explain your answer giving an example for each type.

LEARNING TARGETS:

I can use mathematical &computational skills to claim that mass is conserved during a chemical reaction

I can predict the type of a reaction by analyzing an equation

I can balance and predict the type of reactions

And answer a question like this:

What type of reaction is displayed below?

$HCl + NaOH \rightarrow NaCl + H2O$

A. synthesis

B. decomposition

C. single replacement

D. double replacement

Agenda

Catalyst	10 min
Practice reactions & Balancing	10min
Introduction to solutions	Remaining time
Quiz – Reactions & Balancing	20min
Exit	5min

Thursday
December 05,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED

GPS - SPS6 - Obtain, evaluate, and communicate information to explain the properties of solutions.

CATALYST:

The structure above shows a model of a molecule.

a) Is it an acid or a base? Justify

b) What will happen to HBr when added to water? Write an equation for the reaction.

3) How does adding HBr to the water affect its pH level?

Topic: **Solutions, Acids, Bases &pH**

ESSENTIAL QUESTION: What does pH stands for? Indicate the range of pH values for acids, bases and Neutral substances.

LEARNING TARGETS:

I can explain the properties of solution such as concentration & conductivity

I can explain factors that affect the rate of solubility of solid and gaseous solutes

I can analyze solubility charts/curves to identify different types of solutions

And answer a question like this:

Which of these kitchen substances will NOT dissolve in water?

A. oil

B. sugar

C. table salt

D. food coloring

Agenda

Catalyst	10 min
Virtual lab - pH	50min
Practice – pH, acid and bases.	Remaining time
Exit	5min

Friday
December 06,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED

GPS - SPS6 - Obtain, evaluate, and communicate information to explain the properties of solutions.

CATALYST:

The diagram above shows the pH of a certain detergent.

a) Is it an acid or a base? Justify

b) What will happen to HCl when added to water? Write an equation for the reaction.

3) How does adding NaOH to the water affect its pH level?

Topic: **Solutions, Acids, Bases &pH**

ESSENTIAL QUESTION: How is an *Acid* different from a *base*? Explain your answer giving an example for each.

LEARNING TARGETS:

I can explain the properties of solution such as concentration & conductivity

I can explain factors that affect the rate of solubility of solid and gaseous solutes

I can analyze solubility charts/curves to identify different types of solutions

And answer a question like this:

Ming wants to dissolve 10 grams of salt in water. Which of the following will make the salt dissolve fastest?

A. using cold water and stirring the mixture

B. using hot water without stirring the mixture

C. using hot water and stirring the mixture

D. using cold water without stirring the mixture

Agenda

Catalyst	10 min
Practice – Solutions &Acid &bases	50min
Introduction to Nuclear chemistry	Remaining time
Exit	5min

Monday
December 09,2019

NOTES – USA test prep – atoms/periodic table – due – 11/19

ALL ASSIGNMENTS IN USA TEST PREP – DUE BY – NOV-30th AND WILL BE LOCKED

GPS Obtain, evaluate, and communicate information to explain the properties of solutions.

CATALYST: Balance and identify the following reactions

a. ---- $Al + O_2 \rightarrow$ ---- Al_2O_3

b. ---- $CaCO_3 \rightarrow$ ---- CaO + ----- CO_2

c. ---- Zn + ----- $HCl \rightarrow$ ---- $ZnCl_2$ + ---- H_2

d.--- $NaCl$ + ---$MgBr_2 \rightarrow$ --$NaBr$ + --- $MgCl_2$

Topic: **Nuclear chemistry**

ESSENTIAL QUESTION: How is a *strong acid* different from a *weak acid*? Explain your answer giving *an example* for each type.

LEARNING TARGETS:

I can use mathematical &computational skills to claim that mass is conserved during a chemical reaction

I can predict the type of a reaction by analyzing an equation

I can balance and predict the type of reactions

And answer a question like this:

The indicator phenolphthalein is colorless in an acid but changes color to pink in a base. A liquid with which pH would change the indicator pink?

A. 3

B. 5

C. 7

D. 9

Agenda

Catalyst	10 min
Summative – Solutions &types of reactions	50min
Introduction – Nuclear chemistry	Remaining time
Exit	5min

Friday
April 26,2019

NOTES –recovery –USA test prep – formative – balancing &type– 4/29

Summative – Balancing, solutions & acid & bases – 4/30

GPS - SPS6 - **Obtain, evaluate, and communicate information to explain the properties of solutions.**

CATALYST:

Sofia has two *10-gram samples of sea salt*. One sample is *finely ground* into thousands of tiny grains of salt. The other sample is a *single block* of salt crystals.

1) **What is solubility?**
2) **Name the factors that affect the rate of solubility.**
3) **In the above situation which sample will dissolve first? Why**

Topic: S**olutions, Acids, Bases &pH**

ESSENTIAL QUESTION: How is the *solubility of solid* solutes differ from that *of gases*?

LEARNING TARGETS:

I can explain the properties of solution such as concentration & conductivity

I can explain factors that affect the rate of solubility of solid and gaseous solutes

I can analyze solubility charts/curves to identify different types of solutions

And answer a question like this:

The combination of a solvent and a solute that cannot be separated by filtration makes a,

A. suspension.

B. colloid.

C. solution.

Agenda

Catalyst	10 min
Introduction – Acids, Bases &pH	50min
Virtua lab – pH &solubility	Remaining time
Exit	5min

Tuesday
March 12,2019

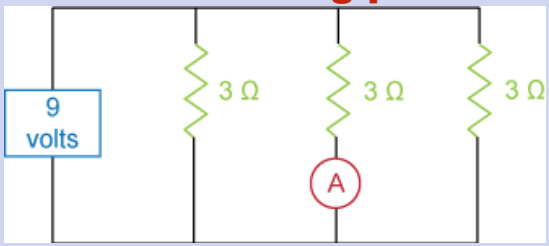
NOTES – Unit test – electricity & magnetism- 3 /19

Unit recovery – waves – USA test prep – Due by 3/15

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:

Write the ohm law equation with the units and solve the following problem.



a)What type of circuit is shown in the diagram

b) Name the device used for measuring the current

b) Find the current in ammeter A

Topic: **electricity & magnetism**

EQ – How do you find the power in a circuit? What does energy refers to? How do you find energy?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

If the potential difference across a 12-ohm resistor is 4 volts, what is the current through it?

A. 0.3 A

B. 0.5 A

C. 3 A

D. 4 A

Agenda

Catalyst	8 min
Power point notes - magnetism	40 min
Reading - magnetism	Remaining time
Exit	5min

Wednesday
March 13,2019

NOTES – Unit test – electricity & magnetism- 3 /19

Unit recovery – waves – USA test prep – Due by 3/15

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:

a)Draw a schematic representation of a series circuit

b) Name the device used for measuring the current

c) What stays the same for all devices in a series circuit

d) How do you find the total resistance for the above circuit

e)what will be the current in the circuit with a voltage of 12V and a total resistance of 8ohms?

Topic: **electricity & magnetism**

EQ – How is a *DC* circuit different from an *AC* circuit? Explain giving an example for each.

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

An electric motor contains an electromagnet surrounded by a magnet. What is the function of an electromagnet in a motor?

A. converts electrical energy to motion.

B. converts magnetic energy to electrical

C. increases the strength of the magnet surrounding it.

D. provides the electrical energy required for the motor to run.

Agenda

Catalyst	8 min
Power point notes - Magnetism	40 min
Edpuzzle – electric current and magnetic field	Remaining time
Kahoot – review – types of circuits &ohms law	30min
Exit	5min

Thursday
March 14,2019

NOTES – Unit test – electricity & magnetism- 3 /19

Unit recovery – waves – USA test prep – Due by 3/15

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:

a)Draw a schematic representation of a parallel circuit with three resistors

b) Write any two advantages of a parallel circuit

c)A 12 volt battery and light bulb are arranged in series. The ammeter reads the current to be 0.80 amperes. What is the *resistance* of the light bulb?

Topic: **electricity**

EQ – How is *thickness* of a wire depends on the *resistance* of the wire? Comparing wires with 12cm and 5cm diameter which one has a greater resistance?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

Which of the following shows how conductors, insulators, and semiconductors rank in order of least resistance to most resistance?

A. conductors, semiconductors, insulators

B. semiconductors, conductors, insulators

C. insulators, conductors, semiconductors

D. conductors, insulators, semiconductors

Agenda

Catalyst	8 min
Review – Electricity & magnetism - Quizziz	40 min
Edpuzzle – electric current and magnetic field	Remaining time
Exit	5min

Tuesday
March 19,2019

NOTES –Unit test – electricity & magnetism- 3 /19

Unit recovery – waves – USA test prep – Due by 3/15

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:

How does the length of a wire affect its resistance?

A uniform copper wire has a resistance of 250 ohms. The wire is cut into 25 equal lengths. What is the resistance of each piece?

Topic: **electricity & magnetism**

EQ – How are permanent magnets different from Electromagnets?

LEARNING TARGETS:

I can differentiate between static electricity and current electricity

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

A 330.0-ohm resistor is connected to a 5.00-volt battery. What is the current through the resistor?

A. 15.2 mA

B. 0.152 mA

C. 335 mA

D. 1650 mA

Agenda

Catalyst	8 min
Review – magnetism &electricity	40 min
Edpuzzle – electric current and magnetic field	Remaining time
Exit	5min

Wednesday
March 20,2019

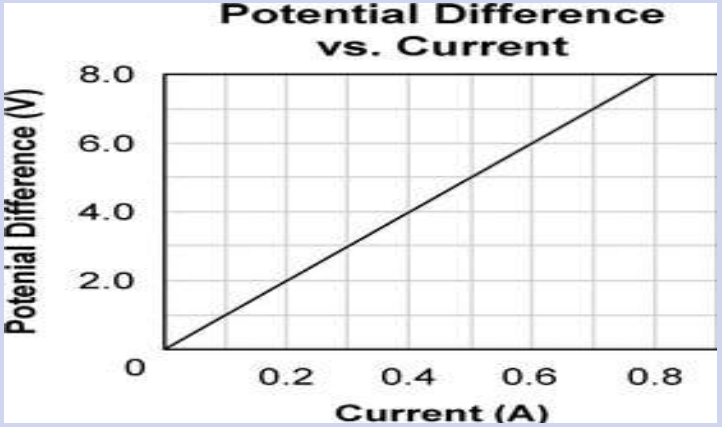
NOTES – Unit test – electricity & magnetism- 3 /19

Unit recovery – waves – USA test prep – Due by 3/15

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:

Write the *Ohms Law* equation. Analyze the graph below *and solve for the resistance* of the conductor in the circuit.



Topic: Topic: **Electromagnetism**

EQ – How does the temperature of a circuit affect its resistance? Justify your answer.

LEARNING TARGETS:

I can differentiate between a permanent and an electromagnet

I can use mathematical skills to derive relationship between current, voltage and resistance

I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

A 330.0-ohm resistor is connected to a 5.00-volt battery. What is the current through the resistor?

A. 15.2 mA

B. 0.152 mA

C. 335 mA

D. 1650 mA

Agenda

Catalyst	8 min
Unit test – Electricity & magnetism	40 min
Pre –reading matter	Remaining time
Exit	5min

Thursday
March 21,2019

NOTES – Quiz – matter – 3/26
recovery – Electricity & magnetism – USA test prep – Due by 3/30

SPS10. Obtain, evaluate, and communicate information to explain the properties of and relationships between electricity and magnetism.

CATALYST:

Tony is planning an experiment using a nail, wire, and a battery to investigate which factors that affect the strength of an electromagnet, and which factors do not affect its strength.

a. **List three factors that can affect the strength of an electromagnet**
b. **Write any one factor that you think has the least affect on the strength of the electromagnet?**

Topic: **Electromagnetism**
EQ – What are magnetic domains? Write two factors that may affect the magnetic domains of a permanent magnet.

LEARNING TARGETS:

I can differentiate between a permanent and an electromagnet
I can use mathematical skills to derive relationship between current, voltage and resistance
I can create and use models to distinguish between series and parallel circuits

And answer a question like this:

A 330.0-ohm resistor is connected to a 5.00-volt battery. What is the current through the resistor?
A. 15.2 mA
B. 0.152 mA
C. 335 mA
D. 1650 mA

Agenda

Catalyst	8 min
Power point notes – Introduction to matter	40 min
ADI lab - electromagnets	Remaining time
Exit	5min

Friday
March 22,2019

NOTES – Quiz – matter – 3/26

recovery – Electricity & magnetism – USA test prep – Due by 3/30

GPS -

SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

CATALYST:

a. **Smith built a circuit that allows multiple routes for the current to move. What kind of circuit did he build?**
b. **Draw a schematic diagram of the above circuit**
c. **Find the resistance of a circuit with a total voltage of 12V and a current of 4Ampere?**

And answer a question like this:

A neutral atom of which element contains 11 electrons
A. Argon
B. Silicon
C. Sodium
D. Iron

Topic: **Matter**

ESSENTIAL QUESTION: Name the three common states of matter? How are they different? Write any 3 differences.

Agenda

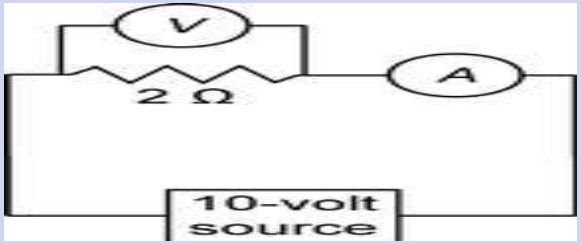
Catalyst	8 min
Pre reading - matter	25
Introduction to matter notes	20min
Independent practice – Atomic structure	30min

Monday
March 25,2019

NOTES – Quiz – matter – 3/27
recovery – Electricity & magnetism – USA test prep – Due by 3/30

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:



What is the reading of the Ammeter in the circuit?
What is another name for voltage?

Topic: **Atomic Structure**

ESSENTIAL QUESTION: How are solid, Liquid, and gas differ in their intermolecular attraction?

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

And answer a question like this:

Which grouping of the three phases of bromine is listed in order of *increasing average distance* between bromine molecules?
A. gas, liquid, solid
B. solid, liquid, gas
C. liquid, solid, gas
D. solid, gas, liquid

Agenda

Catalyst	8 min
Introduction to matter & gas laws -notes	40min
Virtual lab – Gas Laws	40min
Independent practice – states of matter	Remaining time
Exit	

Tuesday
March 26,2019

NOTES – Quiz – matter – 3/27
recovery – Electricity & magnetism – USA test prep – Due by 3/30

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:
a)A mass of gas is enclosed in a rigid container. What will occur if the velocity of the gas molecules colliding with the sides of the container increases?
b)What is pressure?
c)How is pressure related to the temperature?
d)Name the law that explains the above concept.

Topic: **Matter &gas Laws**

ESSENTIAL QUESTION: What is Charles Law?

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

And answer a question like this:

When the pressure exerted on a confined gas at constant temperature is doubled, the volume of the gas is
A. doubled.
B. tripled.
C. quartered.
D. halved.

Agenda

Catalyst	8 min
Practice density &gas relations	40min
USA test prep-practice -matter	Remaining time
Independent practice – Atomic structure	30min

Wednesday
March 27,2019

NOTES – Quiz – matter – 3/27
recovery – Electricity & magnetism – USA test prep – Due by 3/30

GPS -
SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

CATALYST:

1. **If the temperature of a gas sample is doubled while the pressure is kept the same, what will happen to its volume?**
2. **Name the Law that explains the above relation.**
3. **How is pressure and volume of a gas related when other conditions are kept constant**

Topic: **Atomic Structure**

ESSENTIAL QUESTION: What is density? How are pressure and volume related to density? Give two phase changes where the density decreases and two instances where it increases?

LEARNING TARGETS:

I can explain the properties of atoms such s atomic mass & atomic number

I can differentiate the sub atomic particles in terms of their mass, charge and location

I can compare and contrast the structures of atoms, ions and isotopes

And answer a question like this:

When a sample of a gas is heated at constant pressure, the average kinetic energy of its molecules
A. decreases, and the volume of the gas decreases.
B. increases, and the volume of the gas increases.
C. increases, and the volume of the gas decreases.
D. decreases, and the volume of the gas increases.

Agenda

Catalyst	8 min
Quiz - Matter	40min
Nearpod – Atomic Structure	30min
Independent practice – Atomic structure	30min

Wednesday
April 17,2019

NOTES – Unit recovery –USA test prep – Bonding &Naming – 4/24

Formative – Balancing &Type of Reactions – 4/15

GPS - SPS3. Obtain, evaluate, and communicate information to support the Law of Conservation of Matter..

CATALYST:

Eric is designing a solar cooker. He wants to line the outside of the solar cooker with an insulating material.

Material	Specific Heat (J/g°C)
aluminum	**0.900**
concrete	**0.880**
Copper	**0.385**
glass	**0.840**
sand	**0.290**

Put the materials in order from the best thermal insulator to the worst thermal insulator.

Topic: **Balancing & Types of reactions**

ESSENTIAL QUESTION: Why is it important to balance a given chemical equation?

LEARNING TARGETS:

I can use mathematical &computational skills to claim that mass is conserved during a chemical reaction

I can predict the type of a reaction by analyzing an equation

I can balance and predict the type of reactions

And answer a question like this:

Predict the product from a reaction between lithium and oxygen.

A. LiO

B. LiO_2

C. Li_2O

D. Li_2O_2

Agenda

Catalyst	10 min
Introduction to reactions & balancing – power point	30min
Independent practice - Balancing	Remaining time
Exit	5min

Thursday
April 18,2019

NOTES – Unit recovery –USA test prep – Bonding &Naming – 4/24

Formative – Balancing &Type of Reactions – 4/15

GPS - SPS3. Obtain, evaluate, and communicate information to support the Law of Conservation of Matter..

CATALYST:

Devon is learning how to bake bread. The table shows the baking pans Devon could use.

Type of Pan	Specific Heat (J/g°C)
ceramic	0.880
copper	0.385
glass	0.840
iron	0.444

He wants to use a pan that will heat up slowly and retain the heat for a long time.

a. Is he looking for an insulator or a conductor?

b. How is specific heat related to the above two properties?

c. Which pan should Devon choose? Why?

Topic: **Balancing & Types of reactions**

ESSENTIAL QUESTION: What does the Law of conservation of mass state? How is this law applied in a chemical equation?

LEARNING TARGETS:

I can use mathematical &computational skills to claim that mass is conserved during a chemical reaction

I can predict the type of a reaction by analyzing an equation

I can balance and predict the type of reactions

And answer a question like this:

What type of reaction is displayed below?

$2KClO_3 \rightarrow 2KCl + 3O_2$

A. synthesis

B. decomposition

C. single replacement

D. double replacement

Agenda

Catalyst	10 min
Introduction to reactions & balancing – power point	30min
Independent practice - Balancing	Remaining time
Exit	5min

Friday
April 19,2019

NOTES – Unit recovery –USA test prep – Bonding &Naming – 4/24

Formative – Balancing &Type of Reactions – 4/23

GPS - SPS3. Obtain, evaluate, and communicate information to support the Law of Conservation of Matter..

CATALYST:

a. Define Specific heat.

b. Write the equation for specific heat and label each quantity in the equation and their units.

c. If 127.8 J of heat is added to a 4.0 gram sample of iron metal and the temperature of the metal increases from 25°C to 97°C, what is the specific heat of iron?

Topic: **Balancing & Types of reactions**

ESSENTIAL QUESTION: How is *synthesis* reaction different from *decomposition*? Explain your answer giving an *example* for each type.

LEARNING TARGETS:

I can use mathematical &computational skills to claim that mass is conserved during a chemical reaction

I can predict the type of a reaction by analyzing an equation

I can balance and predict the type of reactions

And answer a question like this:

What type of reaction is displayed below?

$2H_2 + O_2 \rightarrow 2H_2O$

A. synthesis

B. decomposition

C. single replacement

D. double replacement

Agenda

Catalyst	10 min
Practice – Balancing &type of reactions –Usa test prep	30min
Independent practice - Balancing	Remaining time
Exit	5min

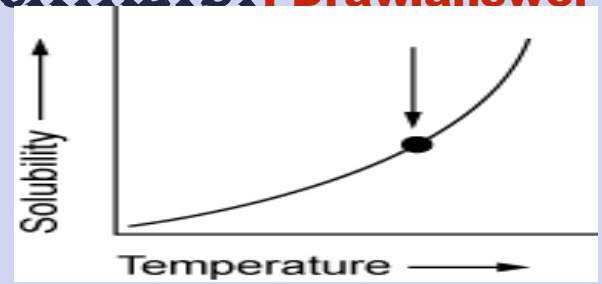
Wednesday
April 24,2019

NOTES – Unit recovery –USA test prep – Bonding &Naming – 4/24

Summative – Balancing, solutions & acid & bases – 4/30

GPS - SPS6 - Obtain, evaluate, and communicate information to explain the properties of solutions.

CATALYST: Draw.answer the questions



a. **What does a point located on the line of a solubility curve represent?**

b. **What does a point below the solubility curve represent?**

c. **What does a point above the solubility curve represent?**

Topic: **Solutions, Acids, Bases &pH**

ESSENTIAL QUESTION: How is a *saturated solution* different from an *unsaturated solution*?

LEARNING TARGETS:

I can explain the properties of solution such as concentration & conductivity

I can explain factors that affect the rate of solubility of solid and gaseous solutes

I can analyze solubility charts/curves to identify different types of solutions

And answer a question like this:

Which of these kitchen substances will NOT dissolve in water?

A. oil

B. sugar

C. table salt

D. food coloring

Agenda

Catalyst	10 min
Introduction – Acids, Bases &pH	50min
Practice – Solubility curve readings	Remaining time
Exit	5min

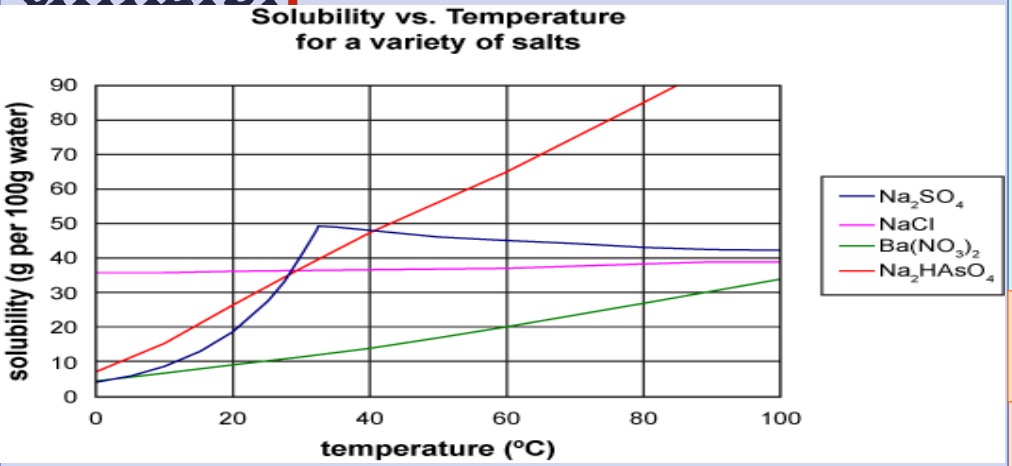
Thursday
April 25,2019

NOTES – Unit recovery –USA test prep – Bonding &Naming – 4/24

Summative – Balancing, solutions & acid & bases – 4/30

GPS - SPS6 - Obtain, evaluate, and communicate information to explain the properties of solutions.

CATALYST:



Write *each salt* with the *correct mass* of the salt that will dissolve in *200 g of water at 60°C*.

Topic: **Solutions, Acids, Bases &pH**

ESSENTIAL QUESTION: What *two components* make up a solution? Which component of a solution is always found in *greater amount* and in *lesser amount*?

LEARNING TARGETS:

I can explain the properties of solution such as concentration & conductivity

I can explain factors that affect the rate of solubility of solid and gaseous solutes

I can analyze solubility charts/curves to identify different types of solutions

And answer a question like this:

To make the HCl ,Fernando mixed 10 mL of HCl with 40 mL of water. What are the properties of this mixture? Select all that apply.

A. The H2O is the solute.
B. The HCl is the solute.
C. The HCl is the solvent.
D. The H2O is the solvent.
E. This mixture conducts electricity.
F. This mixture does not conduct electricity.

Agenda

Catalyst	10 min
Introduction – Acids, Bases &pH	50min
Practice – Solubility curve readings	Remaining time
Exit	5min

Thursday
May 02,2019

NOTES – recovery –USA test prep – formative – balancing &type– 4/29

Formative – Nuclear – 3/8

GPS - SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.

CATALYST:

The diagram above shows the structure of a chemical

a) Is it an acid or a base? Justify

b) What is the pH range for bases?

c) What could be the pH of a strong base?

d) What could be the pH of a weaker base?

Topic: **Nuclear reactions**

ESSENTIAL QUESTION: How are *chemical* reactions different from *nuclear* reactions?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Compared to the energy released per gram during a typical chemical reaction, which of the following best describes the amount of energy released per gram during the decay of a radioisotope?

A. It is less.

B. It is about the same.

C. It is a little more.

D. It is much greater.

Agenda

Catalyst	10 min
Introduction – Nuclear Chemistry	50min
Power point – Nuclear chemistry	Remaining time
Exit	5min

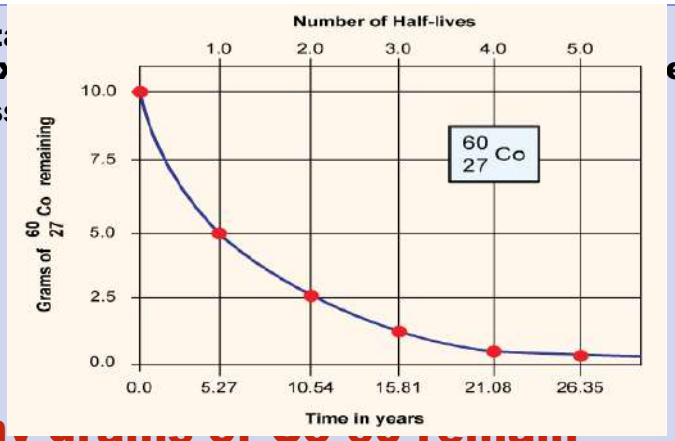
Friday
May 03,2019

NOTES – recovery –USA test prep – formative – balancing &type– 4/29

Formative – Nuclear – 3/8

GPS - SPS4. Obt… information to ex… as a result of fis…

CATALYST:



a) How many … after 3 half lives?
b) How many half lives does it take to become 2.5 grams?
c) How long is five half lives for this substance? What fraction will remain after 3 half lives?
d) What percentage will remain after 4 half lives?

Topic: **Nuclear reactions**

ESSENTIAL QUESTION: How does the *atomic* and *mass* number of the product atom changes during a *gamma* emission?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

Catalyst	10 min
Practice– Nuclear chemistry	50min
Practice – Half Life problems & nuclear decay	Remaining time
Check point Quiz - Quizziz	20min
Exit	5min

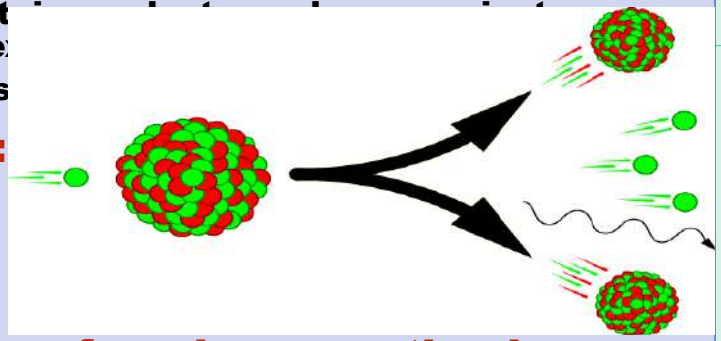
Monday
May 06,2019

NOTES – recovery –USA test prep – summative – balancing &type– 5/10

Formative – Nuclear – 5/8

GPS - SPS4. Obt
information to e
as a result of fis

CATALYST:



a) **What type of nuclear reaction is shown above?**
b) **What is the 2nd type of nuclear reaction?**
c) **How are the above two nuclear reactions different?**
d) **If Bismuth-212 has a half-life of 60.5 seconds, how many grams of the sample will be left after 121 seconds if it originally had 59 grams?**

Topic: **Nuclear reactions**

ESSENTIAL QUESTION: Write any two advantages of nuclear fission reactions.

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

Catalyst	10 min
Study Guide – Nuclear chemistry	50min
Review -1- Mass, motion & Force – USA test prep	Remaining time
Exit	5min

Tuesday
May 07,2019

NOTES – All USA test prep assignments are due by -05/10

MILESTONE – 05/13 – Must bring your fully charged chrome book

GPS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

a. **Make a table of the main group elements and their specific group names.**

b. **Identify the group names for the following elements. Find the group &period as well**

1. Na 2. Sr 3. Se 4. I 5. Rn

Topic: **Milestone review**

ESSENTIAL QUESTION: How are ionic bonds different from covalent bond? (3 differences)

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can differentiate between ionic and covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

Which rule must be fulfilled by sharing or transferring electrons to create bonds in order for an element to be stable?

A. octet rule

B. ionic rule

C. septet rule

D. covalent rule

Agenda

Catalyst	8 min
Summative test – Atoms & periodic table	60min
Introduction to naming - edpuzzle	40min
Exit	

Wednesday
May 08,2019

NOTES – All USA test prep assignments are due by -05/10

MILESTONE – 05/13 – Must bring your fully charged chrome book

GPS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

1.What do the following elements do in order to become stable

a. Li b. Al c. Mg d. S e. Br

2.Write the name/formulas for

a. Dinitrogen pentoxide

b. Barium oxide

c. NO

d. Sr3P2

e. Tetra Phosphorous nona chloride

Topic: **Milestone review**

ESSENTIAL QUESTION: How are *electrolytes* different from *non electrolytes*? What type of substances make *strong electrolytes*?

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can differentiate between ionic and covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

Which rule must be fulfilled by sharing or transferring electrons to create bonds in order for an element to be stable?

A. octet rule

B. ionic rule

C. septet rule

D. covalent rule

Agenda

Catalyst	8 min
Milestone review	Whole class
Exit	3min

Thursday
May 09,2019

NOTES – All USA test prep assignments are due by -05/10

MILESTONE – 05/13 – Must bring your fully charged chrome book

GPS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

Calcium (Ca) is in the second column of the periodic table and is classified as an alkaline earth metal. Iodine is a halogen.

1. **What kind of bond will form between the above two elements**
2. **Use the criss cross method and show the formula for the above combination**
3. **Name the above compound**

Topic: **Milestone Review**

ESSENTIAL QUESTION: How is *naming ionic compounds* different from *covalent compounds*? Explain your answer giving an example for each type.

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can predict the formulas for covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

Predict the product from a reaction between lithium and oxygen.

A. LiO

B. LiO_2

C. Li_2O

D. Li_2O_2

Agenda

Catalyst	10 min
Review - Milestone	50min
Quizziz - milestone	20min
Exit	5min

Friday
May 10,2019

NOTES - All USA test prep assignments are due by -05/10

MILESTONE – 05/13 – Must bring your fully charged chrome book

GPS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

1. What is the formula for a compound when one carbon atom and one oxygen atom combine.

2. What kind of bond will form between the above two elements

3. What is the name of the above substance?

MILESTONE *ACADEMY* – *Monday 5/13* - report to *café directly from the bus* and then to *ROOM 114/116*

Topic: **Milestone Review**

ESSENTIAL QUESTION: What happens to the *valence electrons* when atoms form *ionic* and *covalent* bonds?

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can predict the formulas for covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

Predict the product from a reaction between Beryllium and Phosphorus.

A. BeO

B. BeP_2

C. Be_2P

D. Be_3P_2

Agenda

Catalyst	10 min
Review - Milestone	Whole class
Review	Remaining time
Exit	5min

Thursday
November 01,2018

NOTES – Formative – Bonding &naming – 10/31

Summative – Bonding &naming – 11/2

GPS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

1. What is the formula for a compound when 2 nitrogen atoms combine with 5 oxygen atoms.
2. What kind of bond will form between the above two elements
3. What is the name of the above substance?

Topic: **Bonding &naming compounds**

ESSENTIAL QUESTION: Why do atoms bond? What type of ions do metals and non metals form?

Find the charge on Sr, Tl, Cl & S

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can predict the formulas for covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

Predict the product from a reaction between lithium and oxygen.

A. LiO
B. LiO_2
C. Li_2O
D. Li_2O_2

Agenda

Catalyst	10 min
Gizmo – Covalent bonding	20min
Study guide – bonding & naming	Remaining time
Exit	5min

Friday
November 02,2018

NOTES – Formative – Bonding &naming – 10/31

Summative – Bonding &naming – 11/2

GPS -

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

CATALYST:

Identify the type of bond, formula/name for the following

A. Sr_3P_2

B. P_2O_5

C. Carbon Monoxide

D. Potassium Bromide

E. SCl_3

F. Ga_2S_3

Topic: **Bonding &naming compounds**

ESSENTIAL QUESTION: Why do ionic compounds have greater melting points than covalent compounds?

LEARNING TARGETS:

I can differentiate ionic bonds from covalent bonds

I can predict the formulas for covalent compounds

I can predict the formulas for stable ionic compounds based on balance of charges

And answer a question like this:

Predict the product from a reaction between lithium and oxygen.

A. LiO

B. LiO_2

C. Li_2O

D. Li_2O_2

Agenda

Catalyst	10 min
Gizmo – Covalent bonding	30min
Summative – Bonding & Naming	Remaining time
Exit	5min

Wednesday
November 14,2018

NOTES – Unit recovery –bonding & naming USA test prep Due – 11/16

Summative reactions – 11/14

GPS - SPS3. Obtain, evaluate, and communicate information to support the Law of Conservation of Matter..

CATALYST: Balance and identify the following reactions

a. ---- $Al + O_2 \rightarrow$ ---- Al_2O_3

a. ---- $CaCO_3 \rightarrow$ ---- CaO + ----- CO_2

b. ---- Zn + ----- $HCl \rightarrow$ ---- $ZnCl_2$ + ---- H_2

D - $NaCl$ + ---$MgBr_2 \rightarrow$ ----$NaBr$ + --- $MgCl_2$

Topic: **Balancing & Types of reactions**

ESSENTIAL QUESTION: What is solubility? How does the temperature affect the solubility of a solid and gaseous solutes?

LEARNING TARGETS:

I can use mathematical &computational skills to claim that mass is conserved during a chemical reaction

I can predict the type of a reaction by analyzing an equation

I can balance and predict the type of reactions

And answer a question like this:

Match the missing coefficient to the correct number of molecules so that the equation adheres to the conservation of mass.

$X\ Ag_2O + Y\ Ag + Z\ O_2$

Agenda

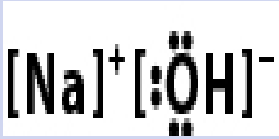
Catalyst	10 min
Summative – Reactions & Law of conservation	50min
Practice – Solubility curve readings	Remaining time
Exit	5min

Tuesday
November 27,2018

NOTES – All unit recoveries in USA test prep will be due by 25th November. Assignments will be locked on 25th evening at 6:00 clock.

GPS - SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.

CATALYST:



The diagram above shows the structure of a chemical

a) Is it an acid or a base? Justify

b) What is the pH range for bases?

c) What could be the pH of a strong base?

d) What could be the pH of a weaker base?

Topic: **Nuclear reactions**

ESSENTIAL QUESTION: How are chemical reactions different from nuclear reactions?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Compared to the energy released per gram during a typical chemical reaction, which of the following best describes the amount of energy released per gram during the decay of a radioisotope?

A. It is less.

B. It is about the same.

C. It is a little more.

D. It is much greater.

Agenda

Catalyst	10 min
Introduction – Nuclear Chemistry	50min
Practice – Half Life problems & nuclear decay	Remaining time
Exit	5min

Wednesday
November 28,2018

NOTES – Summative – Nuclear Chemistry – 12/4

GPS - SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.

CATALYST:

a) **Define Half life**

b) **How do you find the fraction of the substance that remain at a certain half life?**

c) **How do you find the number of half lives if you are given the fraction that remains at a certain half life**

d) Sodium-24 has a half-life of approximately 15 hours. If only one-eighth of the sodium-24 remains, about how much time has passed?

Topic: **Nuclear reactions**

ESSENTIAL QUESTION: How does the atomic and mass number of the product atom changes during an alpha emission?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

Catalyst	10 min
Introduction – Nuclear Chemistry	50min
Practice – Half Life problems & nuclear decay	Remaining time
Exit	5min

Thursday
November 29,2018

NOTES – Summative – Nuclear Chemistry – 12/5

GPS - SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.

CATALYST:

a) **Define radioactivity**

a) **Why do atoms become radioactive?**

c)Plutonium-239 is a radioactive isotope commonly used as fuel in nuclear reactors. The half-life of plutonium-239 is 24,100 years. About how long would it take 504 grams of plutonium-239 to decay until there were only 63 grams plutonium-239 left?

Topic: **Nuclear reactions**

ESSENTIAL QUESTION: How does the atomic and mass number of the product atom changes during a beta emission?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

Catalyst	10 min
Introduction – Nuclear Chemistry	50min
Practice – Half Life problems & nuclear decay	Remaining time
Exit	5min

Tuesday
December 04,2018

NOTES –All of the milestone review activities will be averaged out as your final exam grade!!!

GPS - SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.

CATALYST:

The half-life for a 100-gram sample of a radioactive element X is 5 days.

a) How much of element X remains after 10 days have passed?

b) What fraction and percentage does that amount represent?

Topic: **Nuclear reactions**

ESSENTIAL QUESTION: What is an advantage of a nuclear fission reactor?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

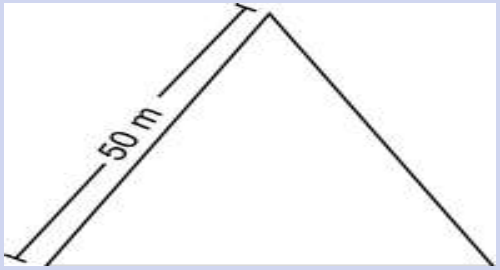
Catalyst	10 min
Study Guide – Nuclear chemistry	50min
Review -2–Energy & energy Conversions - USA test prep	Remaining time
Exit	5min

Wednesday
December 05,2018

NOTES –**All of the milestone review activities will be averaged out as your final exam grade!!!**

GPS - **SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.**

CATALYST:



If Gabrielle walks all three sides of the path in 300 seconds, what is her average speed around the path in meters per second to the nearest tenth?

Topic: **Milestone review**

ESSENTIAL QUESTION: How is velocity different from acceleration?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

Catalyst	10 min
Study Guide – Nuclear chemistry	50min
Review -2–Energy & energy Conversions - USA test prep	Remaining time
Exit	5min

Thursday
December 06,2018

NOTES –All of the milestone review activities will be averaged out as your final exam grade!!!

GPS - SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.

CATALYST:

Charlie lifts a box with a force of 500 N and sets it on a table top 1.2 m above its starting position. Lauren pushes an identical box up a 5 m ramp from the floor to the top of the same table. Which person did more work?

Topic: **Milestone review**

ESSENTIAL QUESTION: When is work done?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

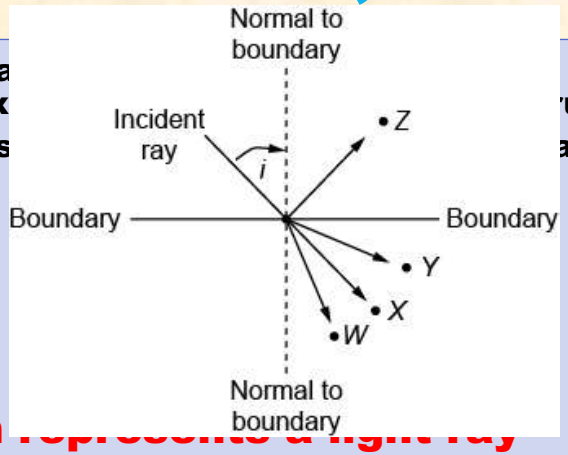
Catalyst	10 min
Study Guide – Nuclear chemistry	50min
Review -2–Energy & energy Conversions - USA test prep	Remaining time
Exit	5min

Friday
December 07,2018

NOTES –All of the milestone review activities will be averaged out as your final exam grade!!!

GPS - SPS4. Obta
information to ex **ucture**
as a result of fiss **ay.**

CATALYST:



The diagram represents a light ray incident on the boundary between two different transparent materials, with angle *i* as the angle of incidence. If the speed of the light increases as it crosses the boundary, *which ray represents* paths of the ray. Why?

Topic: **Milestone review**

ESSENTIAL QUESTION: What happens to the speed of light as it changes medium?

Arrange the medium from the greatest to the lesser speed.

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

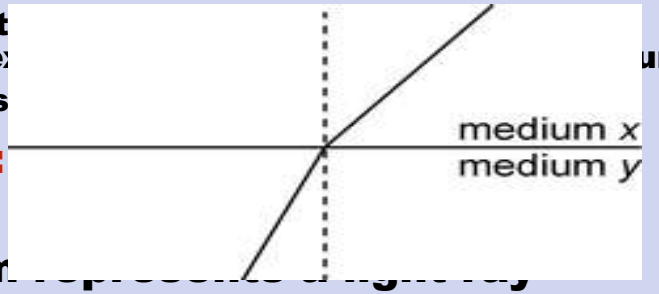
Catalyst	10 min
Study Guide – Nuclear chemistry	50min
Review -4–Waves	Remaining time
Exit	5min

Monday
December 10,2018

NOTES –All of the milestone review activities will be averaged out as your final exam grade!!!

GPS - SPS4. Obt
information to ex **ure**
as a result of fis

CATALYST:



The diagram **passing from one medium into another.**

1) **Name the wave phenomenon.**
2) **Name the dotted line above?**
3) **What happens to the speed of light ray as it goes from a denser medium to rarer?**
4) **Which medium in the above diagram is denser, X or Y? How do you know?**

Topic: **Milestone review**

ESSENTIAL QUESTION: What happens to the speed of light as it changes medium?

Arrange the medium from the greatest to the lesser speed.

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

Catalyst	10 min
Study Guide – Nuclear chemistry	50min
Review -4–Waves	Remaining time
Exit	5min

Tuesday
December 11,2018

NOTES –All of the milestone review activities will be averaged out as your final exam grade!!!

GPS - SPS4. Obtain, evaluate, and communicate information to explain the changes in nuclear structure as a result of fission, fusion and radioactive decay.

CATALYST:

identify the following substances as ionic/covalent. Write the name/formula for the following ionic and covalent compounds.

1) **Magnesium Sulfide**
2) **NaCl, Strontium Fluoride, Al_2S_3**
3) **Dichlorine monosulfide**
4) **SO, P_3Br_5, Li_2O**
5) **Thalium Phosphide, Pentasulfur hexaiodide.**

Topic: **Milestone review**

ESSENTIAL QUESTION: What kind of elements make up ionic and covalent compounds?

LEARNING TARGETS:

I can differentiate between a chemical and a nuclear reaction

I can identify a type of nuclear reactions based on the nuclear radiations

I can differentiate between nuclear fission and fusion reactions

And answer a question like this:

Which statement best describes a risk associated with using radioisotopes in nuclear reactors?

A. If the radiation were to leak out of the reactors, it could produce an abundance of new plants and organisms.

B. If the radiation were to leak out of the reactors, it could cause significant damage to living organisms.

C. Radioisotopes are very expensive and do not produce the amount of energy that coal and oil produce.

D. Radioisotopes are extremely difficult to obtain and can only be retrieved from the Sun.

Agenda

Catalyst	10 min
Milestone review	Whole block
Review -4–Waves	Remaining time
Exit	5min