

Oklahoma Physical Science Framework

Activity (Part 1: absorbed – magnetic)

For each word listed in the left column, find a sentence in the text containing that word. Copy the complete sentence in the space provided. Underline the vocabulary word in your sentence.

Example

accelerations	An applied force will cause a change in the types of energy in the system, therefore the energy found in waves and the interaction of waves and their environment will cause <u>accelerations</u> .
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Word List

absorbed	
Acceleration	
accelerations	
accomplish	
according	
accounted	
acting	

Student Name _____

Date _____

addition	
advantages	
amount	
Analyze	
apart	
applied	
Apply	
arranged	
associated	
atom	
Atomic	
atoms	

Student Name _____

Date _____

attractive	
available	
balance	
based	
behaviors	
Bioshpere	
bond	
building	
calculate	
capable	
capture	
Cause	

Student Name _____

Date _____

cells	
changes	
charge	
chemical	
claim	
cloud	
collision	
combined	
component	
compounds	
computational	
concentration	

Student Name _____

Date _____

conduct	
conduction	
Conservation	
conserved	
constraints	
Construct	
continue	
convert	
converted	
Create	
current	
damage	

Student Name _____

Date _____

data	
describes	
designed	
determine	
Develop	
device	
different	
digital	
direction	
disadvantages	
disordered	
distribution	

Student Name _____

Date _____

effects	
electric	
electrical	
electromagnetic	
electron	
element	
empty	
energy	
engineering	
environment	
Equilibrium	
Evaluate	

Student Name _____

Date _____

evidence	
explanation	
exposure	
field	
fields	
flows	
force	
form	
formation	
frequencies	
given	
goals	

Student Name _____

Date _____

group	
happen	
ideas	
identify	
illustrate	
impact	
important	
increase	
increases	
indicates	
influenced	
information	

Student Name _____

Date _____

integral	
interaction	
investigation	
kinetic	
knowledge	
law	
level	
living	
long	
machines	
macroscopic	
magnetic	

Activity (Part 2: mass – waves)

For each word listed in the left column, find a sentence in the text containing that word. Copy the complete sentence in the space provided. Underline the vocabulary word in your sentence.

Example

accelerations	An applied force will cause a change in the types of energy in the system, therefore the energy found in waves and the interaction of waves and their environment will cause <u>accelerations</u> .
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mass	
materials	
mathematical	
matter	
minimize	
models	
molecules	
Momentum	
motion	

Student Name _____

Date _____

Newton	
nuclear	
nucleus	
object	
orbit	
order	
orientation	
original	
outcome	
outermost	
part	
particles	

Student Name _____

Date _____

patterns	
period	
Periodic	
Periods	
physical	
placed	
Plan	
position	
possesses	
predict	
present	
principles	

Student Name _____

Date _____

produce	
Properties	
protons	
provide	
pushes	
quantity	
questions	
radiation	
rate	
reached	
reacting	
reaction	

Student Name _____

Date _____

reactions	
reactivity	
rearranged	
refine	
regarding	
relative	
release	
reliability	
remains	
repeating	
representations	
results	

Student Name _____

Date _____

revise	
scientific	
second	
simple	
size	
society	
space	
speed	
start	
states	
still	
storage	

Student Name _____

Date _____

stored	
substance	
support	
system	
Table	
temperature	
thermal	
total	
transfer	
transformed	
transmission	
traveling	
trends	
types	

Student Name _____

Date _____

uniform	
validity	
vector	
velocity	
wavelength	
waves	

Text (Passages)

DO NOT WRITE ON THIS PAGE

Atomic Properties and the Periodic Table

The periodic table can be used to identify atomic behaviors/properties and predict the outcome of chemical reactions.

1. Elements are placed on the Periodic Table according to repeating patterns of physical and chemical properties, as well as reactivity patterns.
2. Atomic size decreases going across a period of the table due to increasing nuclear charge. Atomic size increases down a group of elements due to addition of energy levels.
3. All matter is conserved, just broken apart and rearranged to form new molecules/substances.
4. A chemical bond is an attractive force not a physical thing at all.
5. The electron cloud is a “cloud” because of the motion of the electron in orbit around the nucleus, and mostly made up of empty space.
6. Periods on the periodic table are based on the energy levels an atom has.
7. The atomic number of an atom indicates the number of protons an atom has which determines what element and therefore the chemical properties it possesses.
8. Changing the number of electrons an atom has will change its reactivity with atoms around it.

Properties of Chemical Reactions and Conservation of Energy

Chemical reactions always start and end with the same amount of atoms, though they will be arranged differently. Furthermore; how fast the reaction occurs, and if energy is stored or released is all determined by the collisions of the molecules that make up the chemical reaction. The number of collisions of molecules during a chemical reaction can be influenced by temperature as well as the amount of particles present during a reaction.

1. Although the substance changes forms, the atoms are still there. In a closed system you will see no change in mass.
2. A chemical reaction will only happen if a collision occurs, however more requirements, such as orientation and available kinetic energy, must also be met.
3. All matter is conserved, just broken apart and rearranged to form new molecules/substances.

Acceleration and Things That Cause Acceleration

Applying a force to an object will cause acceleration. The size of this acceleration is determined by the mass of the object and the size of force applied. An applied force will cause a change in the types of energy in the system, therefore the energy found in waves and the interaction of waves and their environment will cause accelerations.

1. If a force acts on an object in the same direction as the direction of its motion, the object's speed will continue to increase while the force is acting.
2. Energy can be transferred from one system to another (or from a system to its environment) in different ways: by conduction, mechanically, electrically, or by radiation (electromagnetic waves).
3. Energy can be transferred within a system. Regardless of what happens within a system, the total amount of energy in the system remains the same unless energy is added to or released from the system.
4. Energy can be transformed (converted) within a system.

Momentum

Momentum is determined by the speed of an object and the direction it is traveling (velocity) of an object and the object's mass. This momentum is conserved as long as there are no new objects added to the system. If a new object is added then the momentum will change in order to maintain a balance in the overall system. Devices can be designed and tested, that will use this balance of forces to minimize the effects of a change in momentum on an object.

1. Momentum is a vector quantity.
2. Momentum is mass in motion, whereas forces are pushes or pulls applied to an object or mass.
3. Momentum is conserved in a collision.

Defining and Calculating Energy

The energy of a system depends on the motion of the system, as well as the interactions that occur within the system. Energy is always changing from one kind to another, but the total energy of the system is always the same. Energy can take many forms such as motion, sound, light, and heat. The amount of energy available is mathematically calculable, and determines what the system is capable of doing.

1. Energy can be transformed (converted) within a system.
2. Energy can be transferred from one system to another (or from a system to its environment) in different ways: by conduction, mechanically, electrically, or by radiation (electromagnetic waves).
3. Regardless of what happens within a system, the total amount of energy in the system remains the same unless energy is added to or released from the system.
4. Regardless of what happens within a system, the total amount of energy in the system remains the same unless energy is added to or released from the system.
5. Motion energy (kinetic energy) is associated with the speed and the mass of an object.

The Use of Energy, Its Conservation, and Equilibrium

Energy can be seen in multiple ways and be used to accomplish goals by building machines that capture and use that energy. These machines will transfer one type of energy to another form until a balance between the amounts of the different forms of energy is reached. Show this by building a machine to accomplish a task.

1. Thermal energy of an object is associated with the disordered motions of its atoms or molecules and the number and types of atoms or molecules of which the object is made.
2. Energy can be transformed (converted) within a system.
3. Energy can be transformed (converted) within a system.
4. Energy can be transferred from one system to another (or from a system to its environment) in different ways: by conduction, mechanically, electrically, or by radiation (electromagnetic waves).

The Use of Electromagnetism and Its Effect on the Biosphere

Electromagnetic radiation when absorbed can be converted to thermal energy, cause damage to living cells, or even cause materials to release electrons therefore being converted into electrical energy. In addition, the use of electromagnetic waves can be used to send information worldwide and has become an integral part of our society. It is important to determine the full impact of the advantages and disadvantages of our current use of and exposure to electromagnetism.

1. Energy can be transferred from one system to another (or from a system to its environment) in different ways: by conduction, mechanically, electrically, or by radiation (electromagnetic waves).
2. Only energy is transferred with the wave, the particles always return to their original position.