#### Fall Semester Final Exam Review Questions

1. Our solar system is composed of planets and a variety of other objects including moons, comets, and asteroids. Which of the following is true about the planets in our Solar System? all planets have an elliptical orbit

### 3. The chart below shows the characteristics of several planets in our solar system.

Planet	Length of Orbit	Surface Features	Number of Satellites Orbiting
W	687 dAYS	POLAR ICE CAPS, CANYONS, CRATERS	2 MOONS
×	30 YEARS	AREAS OF RISING AND SINKING GASES	AT LEAST 17 MOONS
У	88 DAYS	MANY CRATERS, SMOOTH PLAINS	NONE
Z	12 YEARS	AREAS OF RISING AND SINKING GASES	AT LEST 16 MOONS

Based on the characteristics, which planet is most likely Planet Y? Planet Y / shorter year then Earth so closer

### 4. The force that holds the planets in orbit around the sun is called \_\_\_\_\_.



5. Two students were discussing an article about a possible mission to Jupiter. Several ideas about gravity came up during their discussion and are listed below.

I: the sun's gravity is pulling on Jupiter and keeps the planet in orbit

II: you would have the same mass on Jupiter as you do on Earth because mass is a property of the object

III: a rocket traveling to Jupiter would just need to travel beyond Earth's atmosphere before the gravitational force would be zero

IV: the gravitational force of Jupiter keeps its moons orbiting Which of these ideas best supports what scientists know about gravity? 6. The National Aeronautics and Space Administration (NASA) is the agency responsible for the space program in the United States. What was the goal of NASA's Apollo Space Program?

to send a human to land on the Moon

The picture below shows a rocket from the Gemini program of the 1960's.



At the time, space missions like these led to which advancements?

## to understand the effects of longer space flights on humans

What causes Venus to travel along a curved path instead of moving in a straight line out into space?



The diagram below represents two atoms in a molecule of oxygen that combine chemically with one atom of carbon to form a carbon dioxide molecule



Carbon Dioxide is an example of a \_\_\_\_



Which element, that is essential for human life, is found in large amounts in both Earth's atmosphere and oceans?



#### The table below show several minerals found on Earth

Mineral	Chemical Composition
Quartz	SiO2
Graphite	С
Calcite	CaCo3
Hematite	Fe2O3

Based on the information in the table, which mineral is also classified

as an element?

### Graphite / C

A thin ribbon of magnesium (Mg) metal burns in the air creating a very bright light. When it is finished burning, there is only a powdery white substance in its place. Which of the following statements best explains the presence of the white powder?

### the white powder was the magnesium (Mg) metal changing into a different element

During a science class experiment, a teacher placed a small amount of sodium metal in 20 ml of water. Which of the following would be the best evidence that a chemical change has taken place?

# Agas was given off

An element is a pure substance represented by a chemical symbol. Which of the following represents an element? H

H20

CO2

NaCl





← 35N 30N 25n I 20N 25N 30N → West / Team 1 90-75=15n to the West / Team 2

Based on the diagram in which direction will the center of the rope move?

A young woman is training to run the Dallas marathon. One afternoon she ran 20.8 kilometers in 1.6 hours. What was her average speed during her training run?





Sharks are built for speed because they need to swim fast enough to catch their prey. What was the average speed of a great white shark that swam 10 kilometers in .25 hours?





Unbalanced forces cause a change in an object's speed, position, or direction. What direction will a book lying on the front seat of a car move if the car suddenly stops?



# Both potential and kinetic energy can be observed at a skatepark.

What explains how the potential and kinetic energy moves as the skater moves from position 1 to position 2? as the potential energy decreases, the kinetic energy increases A student is using an inclined plane to move a heavy box into a truck that is two meters off the ground. Which of the inclined planes will require the least amount of force to move the box into the truck?



The graph below shows the motion of a young man riding a bicycle. 15-10=5m 

What is the average speed of the bicyclist between 3 and 9 seconds?



Last Saturday a student took a bike trip and recorded his distance and time. He then created a graph using his data.



Based on the graph above, during which time segment did the student travel the fastest?

between hour 1 and 2

between hour 2 and 3

between hour 3 and 4

between hour 4 and 5

A hobbyist collected data about the motion of a toy train on a straight track and then recorded the data in the graph below.



Which of these accurately describes the motion of the toy train?

- A: the toy train speeds up while moving forward and then slows down
- B: the toy train slows down while moving forward and then moves backward
- C: The toy train moves forward at a constant speed, slows down, and then stops
- D: the toy train moves forward at an increasing speed, stops, and then moves forward



- A ball is dropped from the roof of a building. Points
- A, B, C and D in the diagram below represents

positions of the ball as it falls.

At which position will the ball have the greatest potential Energy?

A student standing near a campfire feels warmer as the fire grows. Which process most likely transfers heat from the campfire to the student?



Campers use a flashlight outside their tent at night for light.



#### Explain the transformation of energy in a flashlight.

### chemical to electrical to light and heat

A teacher scraped a match against a piece of sandpaper. The match started to burn. Describe the energy changes that occurred?

### the chemical energy stored in the match changed to thermal energy and light energy.



Explain the energy transformations in the coal burning power plant like the one show above?

### chemical to thermal to mechanical to electrical



What is the sequence of the energy transformations represented in the diagram?



3. These cars do not produce pollution and are better for the

A student is in a room that has an air temperature of 25 Degrees Celsius. Before pouring cold water into a glass, she notices that the ice in the pitcher is melting.



Explain the best way for the student to explain how thermal energy is moving in this situation?



A student decided to cook a pot of pasta. When he reached to grab the handles of the pot, contact with the handles burned the student's hands. Which method of thermal energy transfer was responsible for burning his hands?



A class of sixth grade students was investigating methods of thermal energy transfer. One of their lab stations consisted of a Bunsen Burner heating a beaker of water. The diagram below shows the equipment set-up. The arrows represent the transfer of energy in the water.



Which process is primarily responsible for the thermal energy transfer indicated by the arrows in the beaker of water?

### convection / heat rises & cold sinks