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**2015-16 Final Exam Review Sheet**

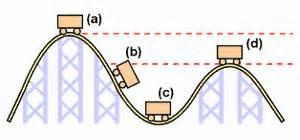
**Physical and Chemistry Science**

**Directions: Answer all questions on a separate piece of paper and keep in your science binder to study for the final exam.**

**Unit 10 – Electricity**

1. Define electric current.
2. Define and give an example of a conductor.
3. Define and give an example of an insulator.
4. Define static electricity and give an example.
5. How do fuses and circuit breakers protect your home?
6. Draw and label a circuit with the following parts: load, energy source, energy pathway and switch.
7. Define and draw a series circuit. And give an example of where you would use it.
8. Define and draw a parallel circuit. And give an example of where you would use it.

**Unit 9 – Energy**

1. Define the Law of Conservation of Energy.
2. Define potential energy
3. Define kinetic energy
4. Draw this roller coaster and then answer the following questions.
   1. Which position has the greatest potential energy?
   2. Which position has the greatest kinetic energy?

(c)

* 1. Name an energy conversion taking place as the roller coaster moves.

1. Identify the 7 forms of energy (SACHEML).
2. Describe the energy conversion for a flashlight.
3. In all energy conversions, which type of energy is always released?
4. What type of energy is found in the food you eat?
5. Define and give two examples of a renewable resource.
6. Define and give two examples of a nonrenewable resource.

**Unit 8 – Newton’s Laws and Work**

1. Define work.
2. How much work is done if a box is moved 6 meters with a force of 7 Newtons? (W=Fxd)

**W=F x d**

**W=**

**W= Joules**

1. Why are machines never 100% efficient?
2. Define air resistance.
3. Define momentum.
4. Define acceleration.
5. Describe the relationship between air resistance and surface area.
6. Which of the following will have the greatest acceleration?

a 5 kg box being moved with 15 N or force or

a 5 kg box being moved with 30 N of force

1. What is the formula for force?
2. If an object has a mass of 20kg and accelerates at a rate of 3m/s² what would the force required?

**F=ma**

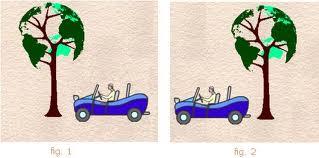
**F=**

**F= N**

1. What determines the amount of inertia an object has?

**Unit 7 – Forces, Motion and Gravity**

1. Define reference point.



1. Define force.
2. Define acceleration.
3. Define gravity.
4. What does the Law of Universal Gravitation state?
5. Describe the difference between speed and velocity.
6. What is the speed of a bike that travels a distance of 300 m in 6 seconds? (use the formula)

**S=d/t**

**S=**

**S= m/s**

1. What is the velocity of a truck that travels 50 km west for 5 hours?

**V=d/t plus direction**

**V= km/h west**

1. Identify the three ways an object can accelerate.
2. What type of force causes a change in motion?
3. What is a balanced force? Unbalanced?

**balanced force =**

**unbalanced force =**

1. Define friction and describe why it occurs.
2. Name two ways to decrease friction (grip) and two ways to increase friction (grip).

**Decrease friction-**

**Increase friction-**

1. Give one example of helpful friction and one example of harmful friction.

**Helpful friction-**

**Harmful friction-**

1. What is the difference between mass and weight?

M**ass is the**

**Weight is the**

1. Explain why a crumpled piece of paper hits the ground before a flat piece of paper.

**Unit 6 – Periodic Table and Chemical Bonding**

1. What are the elements to the right of the zigzag line on the p-table called?
2. What are the elements to the left of the zigzag line on the p-table called?
3. What are most of the elements on the p-table?
4. What are the rows called on the p-table and how many are there?
5. What are the columns called on the p-table and how many are there?
6. What do elements in the same family have in common?
7. The modern p-table is arranged by what?
8. What type of bonding is taking place when atoms share electrons?
9. Chemical bonds cause atoms to lose, gain, or share what part of an atom?
10. How are electrons arranged in atoms?
11. What are the electrons called that are involved in chemical bonding?
12. Explain why noble gases in group 18 don’t want to form chemical bonds.
13. Elements in the same **Group or Family** have similar chemical properties.

**Unit 5 – Atomic Structure**

1. What does the atomic number tell you?
2. When are ions formed?
3. What is the smallest particle of an element that still has all of its properties?
4. Which of the 3 subatomic particles has the least mass?
5. What are the 3 subatomic particles? Identify their location in an atom.
6. How do you determine the atomic mass of an element?

**Atomic mass =**

1. How do you determine the number of protons in an element?

**Protons =**

1. How do you determine the number of electrons in an element?

**Protons =**

1. How do you determine the number of neutrons in an element?

**Neutrons =**

1. If an atom has 6 protons, how many electrons would it have? WHY?
2. How many protons are in Lithium? How many electrons? How many neutrons?
3. How many protons are in Magnesium? How many electrons? How many neutrons?

**Unit 4 – Elements, Mixtures, Compounds, and Solutions**

1. What is the smallest piece of a compound?

**The smallest piece of a compound is**

1. Give 2 examples of a compound.

**H₂0 and CO₂ are compounds because**

1. Name 3 ways to separate a compound.

**Three ways to separate a compound are a**

1. What do elements and compounds have in common?

**Elements and compounds are both**

1. What is the difference between an element, a compound, and a mixture? Give an example of each.

**Element:**

**Compound:**

**Mixture:**

1. How many atoms are in C12H22O11? How many elements?

**\_\_\_\_\_\_\_- atoms and \_\_\_\_\_\_ elements**

1. What are the 2 types of mixtures? Give an example of each.
2. Name 4 ways to separate a mixture.

**Four ways to separate a mixture are**

1. What are the 2 parts of a solution?

**Two parts of a solution are the**

1. What is the solute and solvent in salt water?

**Salt is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and water is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. What does it mean if something is soluble? Give an example.

**Soluble means**

1. What does it mean if something is insoluble? Give an example.

**Insoluble means.**

1. What 3 things can increase solubility?

**The 3 things that can increase solubility are temperature, increase surface area(break up a sugar cube into smaller pieces), and add more solvent(water)**

1. What can decrease solubility?

**These can decrease solubility lower temperature, smaller surface area, and more solute than solvent**

1. If sand, salt, and water were mixed together in a glass, explain why the salt will no longer be visible and why the sand will sink to the bottom of the glass.
2. What physical change would happen to the water after 10 days?
3. How can this physical change happen faster?
4. Why does granulated sugar dissolve faster than a sugar cube?
5. What are NHɜ, H₂O, and HCl examples of?
6. How is a compound different from a mixture?

**Unit 3 – Matter**

1. What is a physical change? Give an example.
2. What is a chemical change? Give an example.
3. What are physical properties? Give some examples.
4. What are chemical properties? Give some examples.
5. What are the four states of matter?
6. Which state of matter has the least amount of energy? WHY?
7. Use the diagram to answer questions 54 and 55.



1. The diagram represents four phase changes, labeled A, B, C, and D, that occur when water changes phase. Label each phase change:
2. Which two processes increase the motion of the molecules?

1. A and B 3. C and D

2. B and C 4. D and A

The diagram below shows a model of a sample of gas particles at room temperature.



1. Circle the diagram which best shows the results of removing heat from this sample until it freezes?



1 2 3 4

1. Circle the graph which best represents the relative distance between the particles of most substances in their solid, liquids, and gaseous states?



1. When does a phase change occur?
2. How do you give a material more energy? Less energy?
3. Name the phase change that occurs from a solid to a liquid.
4. Name the phase change that occurs from a liquid to a solid.
5. Name the phase change that occurs from a liquid to a gas.
6. Name the phase change that occurs from a gas to a liquid.
7. When a material goes from a solid straight to a gas, what is the phase change?
8. What is the phase change called when a material goes from a gas straight to a solid?

**Unit 2 – Measurement and Density**

1. What system of measurement do all scientists use?
2. Explain why mass and weight are NOT the same thing.
3. What tool is used to measure mass?
4. What is the unit/label when measuring mass?
5. A student placed a rock on a triple beam balance. She moved the arrows until the scales were balanced.



What is the mass of the rock?

1. 34.2g 3. 340.21g

2. 342.1g 4. 340g

1. What tool is used to measure the volume of a liquid?
2. What is the unit/label when measuring the volume of a liquid?
3. Which instrument could you use to measure the volume of an irregularly shaped solid?
4. Does the density of an object change if you cut it into pieces? Explain why or why not.

**Unit 1 – Scientific Method**

1. What is the scientific method?
2. What is a hypothesis?
3. What is a control group?