**Energy Conservation Test**

**Name: Date:**

1. **(P.3.2.) What kind of wave is an electromagnetic wave?**
	1. **Sound Wave**
	2. **Earthquake Wave**
	3. **Light Wave**
	4. **Thermal Wave**
2. **(P.3.3.) A hurricane rips through Pinetops NC and tears down all the telephone poles in the area. The utilities company is called to put them back up. They all wear rubber gloves while working with the wires. Why are they wearing rubber gloves?**
	1. **Rubber gloves are good insulators and will block the transfer of electricity energy to the worker**
	2. **Rubber gloves are good insulators and will help/aid the transfer of electricity energy to the worker**
	3. **Rubber gloves are good conductors and will block the transfer of electricity energy to the worker**
	4. **Rubber gloves are good conductors and will help/aid the transfer of electricity energy to the worker**
3. **Heat always travels from…**
	1. **From cooler objects to warmer objects**
	2. **Convection to Radiation**
	3. **Warmer objects to cooler objects**
	4. **Radiation to Conduction**
4. **(P.2.3.) Mass is the amount of matter something is composed of. How does a mother elephant compare to a baby elephant?**
	1. **Mother has a larger mass but the same density as baby**
	2. **Mother & baby have the same mass but mother’s density is greater**
	3. **Mother & baby elephant have the same density & mass**
	4. **Mother has a larger mass and greater density than baby**
5. **(P.3.3.) The Golden Gate Bridge in San Francisco has many cables so it can take on the weight of the millions of cars that travel on it today. It also has Expansion joint strips. How do Expansion joint strips ensure the safety of the Golden Gate Bridge?**
	1. **Expansion joint strips allow the Golden Gate Bridge to contract when it is hot in the summertime and expand when it is colder in the winter**
	2. **Expansion joint strips are not that important to the bridge**
	3. **Expansion joint strips allow the Golden Gate Bridge to expand when it is hot in the summertime and contract when it is colder in the winter**
	4. **Expansion joint strips allow the Golden Gate Bridge to withstand any natural disasters**
6. **(P.3.2.) The temperature of an object will always depend on what?**
	1. **Absorption, Electromagnetic Spectrum & Vacuums**
	2. **Intensity, Duration & Absorption**
	3. **Photons, Duration & Intensity**
	4. **Protons, Neutrons & Electrons**
7. **(P.3.3.) What is the primary difference between CONDUCTORS & INSULATORS?**
	1. **Conductors help/aid heat and electrical energy transfer while Insulators stop heat and electrical energy transfer**
	2. **There is no primary difference between conductors and insulators**
	3. **Conductors stop heat and electrical energy transfer while Insulators help/ aid heat and electrical energy transfer**
	4. **Conductors have atoms that are spread very far apart while insulators have atoms that are very dense which allows heat and electrical energy to transfer**
8. **(P.3.1.) What is Convection heat transfer?**
	1. **Heat transfer through direct contact using a piece of mental as a conductor**
	2. **Heat transfer in movements of waves or currents through liquids or gasses**
	3. **Heat transfer through electromagnetic wave motion through solids, liquids, or gasses**
	4. **Campfire waves radiating through ashes from the wood creating subtemperanious materials in the Earth’s atmosphere**
9. **(P.3.2.) During the day, the sand at the beach is very warm; while at night, it is cooler. Why does this occur?**
	1. **The sand reflects the sun’s energy during the day, causing it to become warmer**
	2. **The sand absorbs the sun’s energy during the day, causing it to become warmer**
	3. **The sun scatters the sun’s energy during the day, causing it to become warmer**
	4. **The sand refracts the sun’s energy during the day, causing it to become warmer**
10. **(P.3.3.) What makes metals good CONDUCTORS of Thermal and Electrical energy?**
	1. **Their atoms are not as dense which makes them not as close together**
	2. **They are good at blocking atoms from moving from one place to another**
	3. **Their atoms are very dense which makes them really close together**
	4. **Their atoms are attached but not very strong which makes them pass energy better**
11. **(P.3.1.) What is Radiation heat transfer?**
	1. **Heat transfer through direct contact using a piece of metal as a conductor**
	2. **Heat transfer in movements of waves or currents through liquids or gasses**
	3. **Heat transfer through electromagnetic wave motion through solids, liquids, or gasses**
	4. **Campfire waves radiating through ashes from the wood creating subtemperanious materials in the Earth’s atmosphere**
12. **(P.3.1.) What is Conduction heat transfer?**
	1. **Heat transfer through direct contact using a piece of metal as a conductor**
	2. **Heat transfer in movements of waves or currents through liquids or gasses**
	3. **Heat transfer through electromagnet wave motion through solids, liquids or gasses**
	4. **Campfire waves radiating through ashes from the wood creating subtemperanious materials in the Earth’s atmosphere**
13. **(P.3.2.) What does DURATION of light mean?**
	1. **It is the ability of the object to have the light/photons bounce off of it**
	2. **It is how hot the object gets**
	3. **It is the number of photons of light the object takes in**
	4. **It is the amount of time that light shines on an object**
14. **(P.3.3.) Gusset Plates are located on bridges. These are metal plates that will allow the bridge to expand when there is a lot of weight on the bridge and contract back when there is nobody driving on the bridge. Why are Gusset Plates so important to a bridge?**
	1. **Gusset Plates allow a bridge to expand and bend without breaking when weight is applied to the bridge therefore saving it from collapsing**
	2. **Gusset Plates allow a bridge to break under the pressure of weight**
	3. **Gusset Plates are not that important to the bridge**
	4. **Gusset Plates allow a bridge to take on less weight therefore saving it from collapsing**
15. **P.3.2.) Electromagnetic Waves are different from Sound Waves & Earthquake Waves how?**
	1. **They can travel through solids and Sound Waves & Earthquake Waves cannot**
	2. **They can travel through liquids and Sound Waves & Earthquake Waves cannot**
	3. **They can travel through gasses and Sound Waves & Earthquake Waves cannot**
	4. **They can travel through vacuums and Sound Waves & Earthquake Waves cannot**
16. **(P.3.3.) Which of these materials makes the BEST CONDUCTOR?**
	1. **Gold**
	2. **Ceramic/Porcelain**
	3. **Plastic**
	4. **Styrofoam**
17. **(P.2.1.) What is an element?**
	1. **Substance that is made of just 1 kind of atom**
	2. **Molecules of gold**
	3. **Molecule of water**
	4. **Energy particle**
18. **(P.2.3.) What is Density?**
	1. **How fast a substance dissolves in liquid**
	2. **How tightly packed together atoms are**
	3. **Temperature at which a substance boils**
	4. **Temperature at which a substance melts**
19. **(P.3.3.) What makes non-metals good INSULATORS of Thermal and Electrical energy?**
	1. **Their atoms are more dense which makes them not as close together**
	2. **They are good at blocking atoms from moving from one place to another**
	3. **Their atoms are very dense which makes them really close together**
	4. **Their atoms are attached but not very strong which makes them pass energy better**
20. **(P.2.3.) Sarah has 100 grams of copper. What would happen if she only melted 50 grams of copper?**
	1. **The melting point would double because the mass would change**
	2. **The melting point would decrease in half because the mass changed**
	3. **The melting process would occur more quickly but the melting point would remain the same**
	4. **The melting process would occur more quickly and the melting point would decrease by half**
21. **(P.3.2.) What does INTENSITY of light mean?**
	1. **It is the ability of the object to have the light/photons bounce off of it**
	2. **It is how hot the object gets**
	3. **It is the number of photons of light the object takes in**
	4. **It is the amount of time that light shines on an object**
22. **(P.3.3.) Why are some coffee cups composed of ceramic/porcelain material?**
	1. **Ceramic/Porcelain materials are conductors that limit heat transfer**
	2. **Ceramic/Porcelain materials are insulators that limit heat transfer**
	3. **Ceramic/Porcelain materials are conductors that aid heat transfer**
	4. **Ceramic/Porcelain materials are insulators that aid heat transfer**
23. **In which situation is heat taken away in a phase change?**
	1. **Atoms move apart as solids turn to liquids**
	2. **Atoms move apart as liquids turn to gases**
	3. **Atoms move together as gas turns to liquid**
	4. **Atoms move together as liquid turns to gas**
24. **(P.3.2.) What does REFLECTION of light mean?**
	1. **It is the ability of the object to have the light/photons bounce off of it**
	2. **It is how hot the object gets**
	3. **It is the number of photons of light the object takes in**
	4. **It is the amount of time that light shines on an object**
25. **(P.3.2.) What are Photons and what do they do?**
	1. **They are sound energy and they transfer the energy along a wave**
	2. **They are seismic energy and they transfer the energy along a wave**
	3. **They are light energy and they transfer the energy along a wave**
	4. **They are earthquake energy and they transfer the energy along a wave**
26. **(P.3.3.) Which of these materials would be a good INSULATOR?**
	1. **Gold**
	2. **Scandium**
	3. **Aluminum**
	4. **Styrofoam**
27. **(P.3.2.) In the summertime if you wanted to stay cool you would wear a white shirt instead of a black shirt. Why would you wear white instead of black to stay cool?**
	1. **Because white will absorb the light keeping you cooler & black would reflect the light which would make you warmer They are seismic energy and they transfer the energy along a wave**
	2. **Because photons are more attracted to white clothing than black clothing**
	3. **Because white will reflect the light keeping you cooler & black would absorb the light which would make you warmer**
	4. **Because the duration you wear white clothing is a lot shorter than the duration that you would wear black clothing**
28. **In which situation would atoms move closer together during a phase change?**
	1. **Heat is removed as a gas turns into a liquid**
	2. **Heat is removed as a liquid turns into a gas**
	3. **Heat is added as a solid turns to a gas**
	4. **Heat is added as a liquid turns into a solid**
29. **Water is put into the freezer & the temperature drops. What has happened?**
	1. **The atoms move faster & atoms spread out & Phase has changed into a gas**
	2. **Atoms move slower & atoms spread out & phase changes to a gas**
	3. **Atoms move faster & atoms come together & phase changes to a liquid**
	4. **Atoms move slower & atoms come together in rigid form & phase changes to a solid**
30. **What is happening in this picture?**
	1. **Object is being changed from a gas to a liquid**
	2. **Object is being changed from a solid to a liquid**
	3. **Object is being changed from a liquid to a solid**
	4. **Object is being changed from a gas to a solid**

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**CONSTURCTED RESPONSE:**

**Please respond in constructed response form. You may use your rubric & Essential Standards.**

**Questions #1**

**Draw the Phase Change Chart**

**Question #2**

**Draw the Intensive/Extensive Chart**