

Quiz 6 – Energy

Name: _____ Group: _____

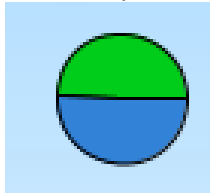
1. Circle the items below that are forms of energy and put x's through the items that are not forms of energy.

Chemical	Air	Sound	Electrical
Power	Banana	Gasoline	Nuclear
Thermal	Water	Electromagnetic	Wood

2. Does energy have mass? Please provide examples.

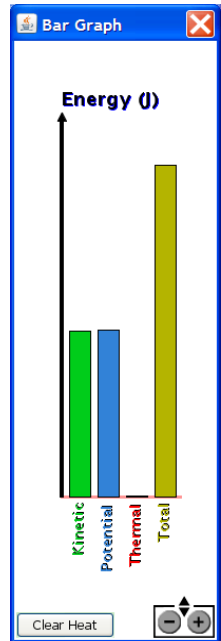
No, Energy does not have Mass. Consider a bowling ball sitting at rest on a floor compared to rolling across the floor after you push it. While at rest it has the same mass as it does while rolling. However it clearly has more energy while rolling than it did while at rest. Adding energy did not add mass.

3. Draw a pie chart that matches this bar graph shown.



4. Draw the bar graph that matches the pie chart shown.

See below the pie chart for the appropriate bar graph.



5. Sally says "kinetic energy can turn into thermal energy." Jean says, "No, energy cannot be created nor destroyed so you cannot create thermal from nothing and you can't destroy the kinetic."

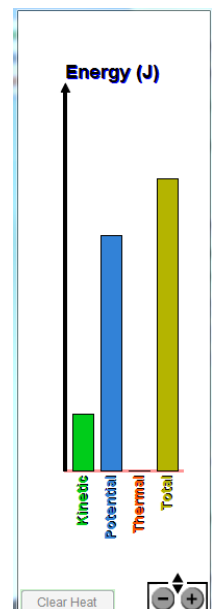
Who's correct?

A. Sally

B. Jean The first part of what Jean says is true but the rest does not fit what Sally is talking about. Jean says you cannot create thermal from nothing. Sally is saying you turn kinetic into thermal. She did not suggest that the thermal is created from nothing, you just change the form.

C. Both Sally and Jean

D. Both are incorrect.



6. When a car begins from rest and speeds up to 50 mi/hr, energy begins as _____ and ends up as _____.

- A. Chemical, Thermal
- B. Chemical, Kinetic**
- C. Kinetic, Thermal
- D. Kinetic to Gravitational Potential
- E. Gravitational Potential, Kinetic

6. When a rock drops from a tall building, energy begins as _____ and ends up as _____ before it hits the ground.

- A. Chemical, Thermal
- B. Chemical, Kinetic
- C. Kinetic, Thermal
- D. Kinetic to Gravitational Potential
- E. Gravitational Potential, Kinetic**

7. When a car is parked on a hill and its brakes fail, it begins rolling towards the bottom picking up speed, energy begins as _____ and ends up as _____.

- A. Chemical, Thermal
- B. Chemical, Kinetic
- C. Kinetic, Thermal
- D. Kinetic to Gravitational Potential
- E. Gravitational Potential, Kinetic**

8. When a person tosses a baseball straight up into the air, after leaving the person's hand the ball goes up and stops before falling back to the ground. Energy begins as _____ and ends up as _____ at the top of the flight.

- A. Chemical, Thermal
- B. Chemical, Kinetic
- C. Kinetic, Thermal
- D. Kinetic to Gravitational Potential**
- E. Gravitational Potential, Kinetic

9. When Nicole runs a marathon from the start of the race to the end when she's hugging her opponent, energy begins as _____ and ends up as _____.

- A. Chemical, Thermal**
- B. Chemical, Kinetic
- C. Kinetic, Thermal
- D. Kinetic to Gravitational Potential
- E. Gravitational Potential, Kinetic

10. When the burner on a stove top turns red hot, energy begins as _____ and ends up as _____.

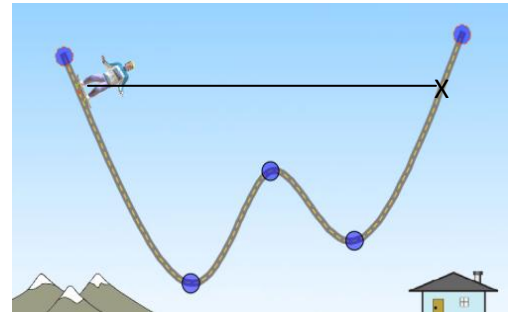
- A. chemical, thermal
- B. Electrical, thermal and electromagnetic**
- C. Electrical, thermal only
- D. Thermal, Electromagnetic
- E. Kinetic, Thermal

10. How does a giant windmill harvest wind energy and convert it into electrical energy?

Wind blows into the blades and causes them to turn. This is kinetic energy of air movement turned into kinetic energy of fan blades moving. The turning blades turn a shaft inside the windmill. Through some gears the big shaft turning causes a smaller shaft to turn faster. Kinetic energy of the large shaft is transformed into kinetic energy of a smaller shaft. The small shaft turns magnets causing a changing magnetic field. A changing field (moving magnets) cause electrons to move. Moving electrons are electricity. So the kinetic energy of the small shaft goes into kinetic energy of magnets moving, which turns into kinetic energy of electrons which by definition is electrical energy.

11. If there is no friction on the track, how high does the skater get if he starts as shown? Mark the exact spot with an X.

Just like the pendulums in lab, the skater reaches a point just as high as his starting point. No energy goes into thermal without friction so it goes from gravitational potential to kinetic back to gravitational potential.



12. If an object carries a net electrical charge, it will

- A. attract all other objects
- B. attract all plastic objects
- C. attract only objects with a like charge **repels like charges**
- D. attract only objects with the opposite charge **It also attracts conductors and bits of uncharged paper**
- E. attract bits of paper along with other charged objects but this is the only option that is true.**

13. An item with a positive charge

- A. gained electrons
- B. gained protons **If an object gains or loses protons, it becomes a completely different substance!**
- C. lost electrons**
- D. lost protons

14. All magnets

- A. have a net electrical charge magnetism is different than electrical charge
- B. are attracted to all metals Magnet in lab was not attracted to aluminum
- C. both A and B
- D. neither A or B**

15. Power is

- A. energy output per unit time**
- B. a form of Energy
- C. a force
- D. All of the above
- E. None of the above