Astronomy Misconceptions

1. Which is bigger, an atom or a grain of sand?

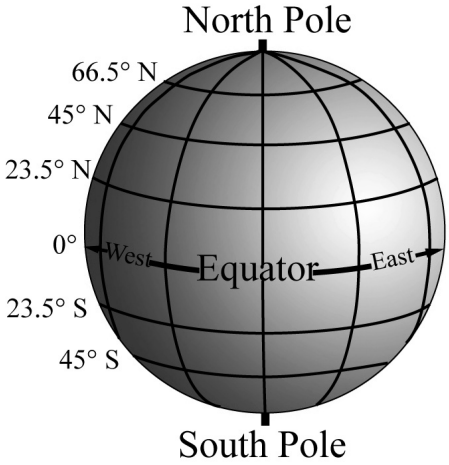
   A. The atom is bigger.

   B. They are the same size.

   C. The grain of sand is bigger.

   D. It depends on the kind of atom.

2. In which months during a year does the sun reach its maximum height in the sky above places on the equator?



   A. All year

   B. Only in March

   C. Only in September

   D. In March and September only

3. Which of the following statements best explains why sunlight would reach two places on Earth at different angles?

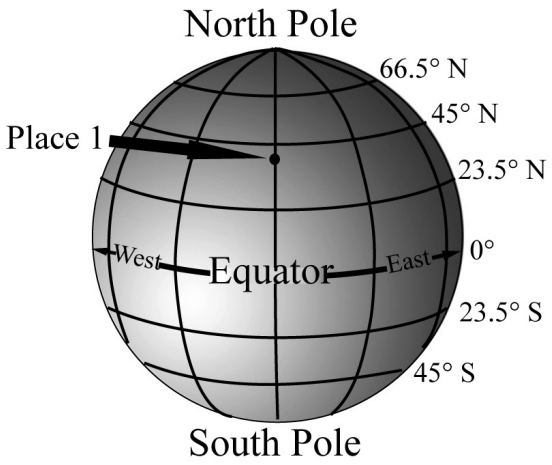
   A. Because sunlight does not travel from the Sun to the Earth in straight lines, sunlight hits different places at different angles.

   B. Because sunlight does not travel from the Sun in parallel lines, sunlight hits different places at different angles.

   C. Because the Earth is spherical, sunlight hits different places at different angles.

   D. Because the Earth's axis is tilted sunlight hits different places at different angles.

4. Which of the following statements is TRUE about changes in the Sun's daily maximum height in the sky at Place 1 shown below starting on a day in late December (the first day of winter)?



   A. The maximum height the sun reaches in the sky increases each day over the next 12 months.

   B. The maximum height the sun reaches in the sky decreases each day over the course of the next 12 months.

   C. The maximum height the sun reaches in the sky increases each day for six months and then decreases each day for the next six months.

   D. The maximum height the sun reaches in the sky does not change.

5. Which of the following statements describes how wind can change mountains?

   A. Wind can gradually wear away the solid rock of mountains as much as thousands of feet over many millions of years.

   B. Wind can wear away the solid rock of mountains no more than several feet over many millions of years.

   C. Wind can wear away the solid rock of mountains no more than several inches over many millions of years.

   D. Wind cannot wear away the solid rock of mountains, even over many millions of years.

6. A student who lives in the United States observes the sun moving across the sky during January, and she sees that the highest the sun gets during the day is just above the top of a building across the street from her house.

   If she observes the sun from the same place in March, what would she see?

   A. The sun would also reach the top of the building in March.

   B. The sun would reach higher than the top of the building in March.

   C. The sun would not reach as high as the top of the building in March.

   D. Whether or not the sun would reach the top of the building in March would depend on where in the United States she lives.

7. The thermal energy of an object depends on which of the following?

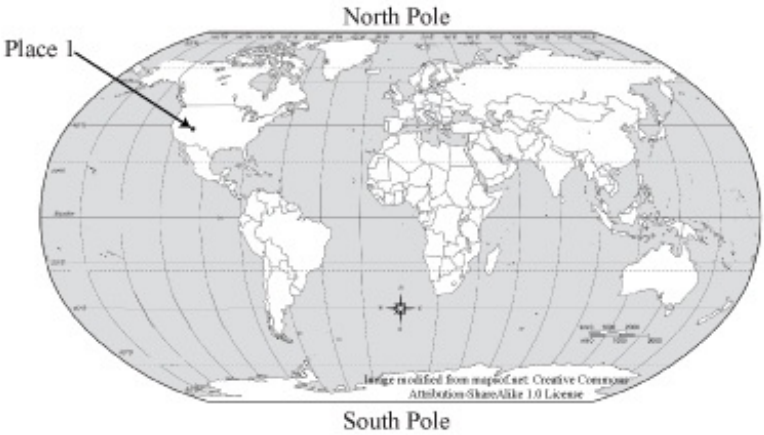
   A. Both the mass of the object and the material it is made of

   B. The mass of the object but not the material it is made of

   C. The material the object is made of but not the mass of the object

   D. Neither the mass of the object nor the material it is made of

8. A student who lives at Place 1 in the diagram shown below observes the sun moving across the sky during the day.



   Would a student who lives directly north of Place 1 see the sun reach the same maximum height in the sky that day?

   A. No, the maximum height of the sun for all places north of Place 1 would be lower than it is at Place 1.

   B. No, the maximum height of the sun for all places north of Place 1 would be higher than it is at Place 1.

   C. Yes, the maximum height of the sun for all places north of Place 1 would be the same as at Place 1.

   D. It depends on where the student lives. The sun's maximum height would be the same as it is at Place 1 everywhere north of Place 1 except at the North Pole, where it would be lower.

9. A girl is sitting under an umbrella at the beach on a sunny day. When she moves out of the shade and into the sunlight, she will feel warmer. Why?

   A. Because energy is being transferred directly from the sun to the girl

   B. Because energy is being transferred from the sun to the air and then from the air to the girl, but no energy is being transferred directly from the sun to the girl

   C. Because energy is being transferred from the sun to the ground and then from the ground to the girl, but no energy is being transferred directly from the sun to the girl

   D. Because the sun is shining on the girl, not because energy was transferred from the sun to the girl

10. After the sun rises above the horizon, what happens to the angle at which sunlight hits any given place on the earth's surface?

   A. The angle changes continuously throughout the morning and evening, but does not change during the middle of the day.

   B. The angle changes continuously throughout the day from morning to evening.

   C. The angle changes rapidly during the morning, changes slowly during the middle of the day, and changes rapidly during the evening.

   D. The angle does not change at all during the day from morning to evening.

11. A student has two identical glasses of milk except that the temperature of the milk in one glass is 40ºF and the temperature of the milk in the other glass is 80ºF.

Milk at 40ºF Milk at 80ºF

The milk at which temperature has more thermal energy?

A. The milk at 40ºF has more thermal energy.

B. The milk at 80ºF has more thermal energy.

C. Both the milk at 40ºF and the milk at 80ºF have the same amount of thermal energy.

D. Neither the milk at 40ºF nor the milk at 80ºF has any thermal energy.

12. A student lives in a town where the summers are very warm and the winters are very cold. Why is it colder in the winter than in the summer?

A. Because sunlight is cooled by the cold air in the winter.

B. Because sunlight reaches the town at a smaller angle in the winter.

C. Because sunlight has to pass through more clouds to get to the town in the winter.

D. Because sunlight has to travel a much longer distance to get to the town in the winter.

13. Which of the following is TRUE about how wind can change earth's solid rock layer and loose material on top of it?

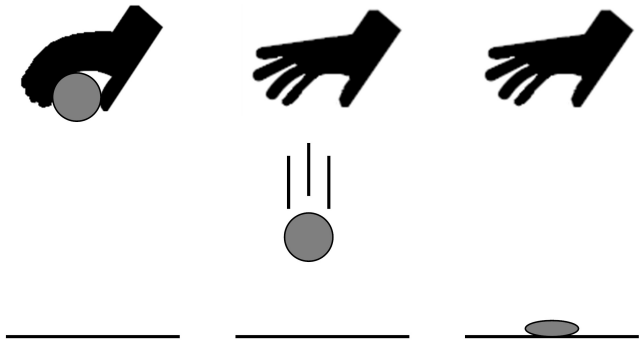
A. Wind can break rocks, carry rocks, and drop rocks in new locations.

B. Wind can break rocks, but cannot carry and drop them in new locations.

C. Wind can carry rocks and drop them in new locations, but cannot break rocks.

D. Wind cannot break rocks, carry rocks, or drop them in new locations.

14. A boy holds a piece of clay above the floor. After he drops the clay, it speeds up as it falls. As it hits the floor, the clay flattens and gets a little warmer.



Which of the following describes the changes in the energy of the clay ball?

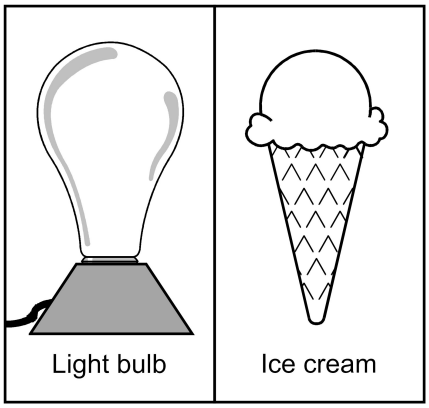
A. As the clay falls, its gravitational potential energy is converted to motion energy (kinetic energy). As it hits the floor, its motion energy (kinetic energy) is converted to thermal energy.

B. As the clay falls, its motion energy (kinetic energy) is converted to gravitational potential energy. As it hits the floor, its gravitational potential energy is converted to thermal energy.

C. As the clay falls, its gravitational potential energy is converted to motion energy (kinetic energy). As it hits the floor, its motion energy (kinetic energy) is used up but is not converted into thermal energy.

D. As the clay falls, its motion energy (kinetic energy) is converted to gravitational potential energy. As it hits the floor, its gravitational potential energy remains the same and is not converted into thermal energy.

15. Consider a light bulb and an ice cream cone.



Which gives off energy by radiation and why?

A. Both a light bulb and an ice cream cone because all objects radiate energy

B. Neither a light bulb nor an ice cream cone because only the sun radiates energy

C. Only a light bulb when it is glowing because only glowing objects radiate energy

D. Only a light bulb when it is hot because only hot objects radiate energy

16. Which statement describes the location of the molecules of a gas in a sealed container?

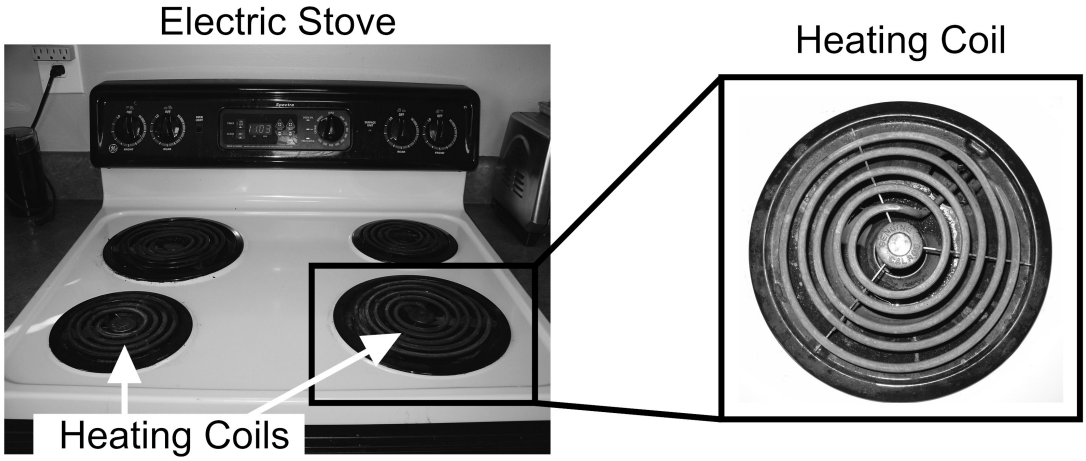
A. The molecules are packed closely throughout the container.

B. The molecules are spread far apart throughout the container.

C. Almost all of the molecules are at the top of the container.

D. Almost all of the molecules are at the bottom of the container.

17.



When do the heating coils on an electric stove give off energy in the form of electromagnetic radiation?

A. Only when they are too hot to touch

B. Only when they are so hot that they are glowing

C. The coils give off energy in the form of electromagnetic radiation at all temperatures.

D. The coils do not give off energy in the form of electromagnetic radiation at any temperature.

18. Do the intensity of sunlight and the amount of time the sun is above the horizon at a place in North America change from day to day?

A. Both the intensity of sunlight and the amount of time the sun is above the horizon change a little every day.

B. The intensity of sunlight changes a little every day, but the amount of time the sun is above the horizon does not change from day to day.

C. The amount of time the sun is above the horizon changes a little every day, but the intensity of sunlight does not change from day to day.

D. Both the intensity and the amount of time the sun is above the horizon are the same from day to day.

19. Which of the following is TRUE about the movement of earth's plates?

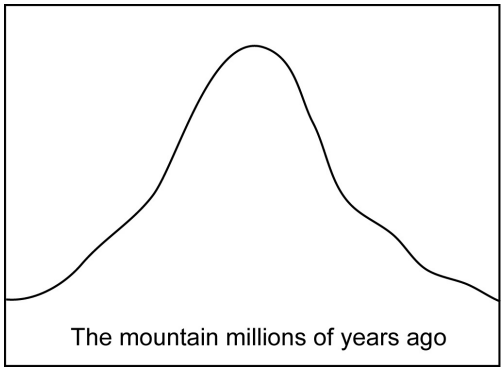
    A. They do not move because they sit on a layer of solid rock.

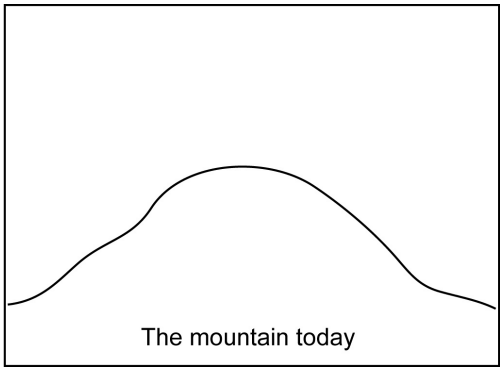
    B. They move along with the layer of slightly softened rock below them.

    C. They move by floating on a layer of completely melted rock below them.

    D. They do not move until the solid rock layer beneath them temporarily melts and moves.

20. Could wind and water have broken the solid rock of a mountain so that it is now half the height that it was millions of years ago?





    A. Wind and water could have broken the solid rock of the mountain gradually every day, which after millions of years could have made the mountain half the height it used to be.

    B. Wind and water could have made the mountain half the height it used to be, but only by occasionally breaking the solid rock of the mountain during huge storms.

    C. Even though the mountain could have become be half the height it used to be, it could not have gotten smaller from wind and water breaking the solid rock of the mountain.

    D. Wind and water could have broken the solid rock of the mountain and made it smaller, but wind and water could not have made the mountain half the size it used to be.