Science Test

Grade 5
Test Booklet

Practice Test 3

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Mississippi Department of Education
Office of Student Assessment
Science
Sample Items

1. Look at the following thermometer. The thermometer measures temperature in degrees Celsius (°C).

What is the temperature shown on the thermometer?

A. 10°C  
B. 0°C  
C. –5°C  
D. –10°C

2. What type of tissue is attached to the skeletal system and helps bones move?

F. Muscle tissue  
G. Cardiac tissue  
H. Adipose tissue  
J. Epithelial tissue
1. Lisa moves at a constant speed during an exercise run. The following graph shows her motion for the first 30 seconds of the run.

![Graph showing the motion of a runner over time]

If Lisa continues to run at the same speed for 20 more seconds, what is the total distance, in meters (m), she will have traveled?

A. 40 m  
B. 80 m  
C. 100 m  
D. 120 m
2. Toby has two beakers of liquid at room temperature. He places both beakers on a hot plate. The liquid in Beaker A boils before the liquid in Beaker B.

Which statement explains why the liquid in Beaker A boiled before the liquid in Beaker B?

F. Beaker A has a lower boiling point.
G. Beaker B has a higher freezing point.
H. The liquid in Beaker A has less mass.
J. The liquid in Beaker B has a lower density.

3. Monica made a snack for her friends by putting pretzels, peanuts, and raisins together in a bowl.

Which statement describes Monica’s snack?

A. It is a new element because a chemical change took place.
B. It is a solution because the ingredients cannot be separated.
C. It is a new compound because a physical change took place.
D. It is a mixture because each ingredient kept its original properties.

4. Which of these effects does a prism have on light?

F. It reflects the light.
G. It focuses the light.
H. It refracts the light.
J. It absorbs the light.
5. The following diagram shows the structure of an alluvial fan at the mouth of a small canyon.

Which statement explains the forces responsible for producing these features?

A. The canyon and fan were produced by the destructive force of erosion.
B. The fan was formed by deposition, and the canyon was formed by erosion.
C. The canyon and fan were both formed quickly by an earthquake and wind.
D. The fan and canyon were produced by the constructive force of deposition.
6. The following diagram shows the layers of Earth’s atmosphere.

Which of these names the layers of Earth’s atmosphere in order, starting with Layer 1?

F. Troposphere, stratosphere, mesosphere, thermosphere, exosphere
G. Troposphere, stratosphere, mesosphere, exosphere, thermosphere
H. Stratosphere, troposphere, thermosphere, mesosphere, exosphere
J. Stratosphere, mesosphere, troposphere, exosphere, thermosphere
7. The environmental club is setting up a program to dispose of aluminum cans. The club made the following chart to review the methods under consideration.

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throw cans away</td>
<td>Cans get added to landfills.</td>
</tr>
<tr>
<td>Burn the cans</td>
<td>Cans are destroyed by fire and send pollution into the air.</td>
</tr>
<tr>
<td>Recycle the cans</td>
<td>Cans are melted in order to make more cans or other aluminum products.</td>
</tr>
<tr>
<td>Reuse the cans</td>
<td>Cans are cleaned and used as containers for everyday materials (pencils, nails, paint).</td>
</tr>
</tbody>
</table>

Which statement describes the method the environmental club will choose and why?

A. Burning, because it will completely destroy the unwanted cans  
B. Reusing, because it will delay them from being added to landfills  
C. Recycling, because it allows the extended use of aluminum as a resource  
D. Throwing out, because it does not involve putting any pollution into the air
8. Manny looks in the mirror every morning before leaving for school. The following shows what Manny sees.

How is it possible that he is able to see his image in the mirror?

F. Light rays go straight through the mirror so that the image appears.
G. Light rays are absorbed by the mirror so that the image can be seen.
H. Light rays are reflected back after they hit the mirror to create the image.
J. Light rays are refracted as they hit the mirror and bend to form the image.
9. Which food chain shows the organisms in order from producer to consumer?

A. Lettuce → Bird → Caterpillar

B. Lettuce → Caterpillar → Bird

C. Bird → Caterpillar → Lettuce

D. Bird → Lettuce → Caterpillar
10. Ashley thought that fewer seeds would grow in salt water than in fresh water. To test her hypothesis, she performed the following steps:

1) Plant ten seeds in a small container of soil.
2) Pour salt water into the container.
3) Place the container in sunlight.
4) Watch the container for five days.

After five days, Ashley found that only two seeds grew. She decided that her hypothesis was correct.

Which statement describes why Ashley should be less confident that her hypothesis is correct?

F. She grew the seeds only in salt water and did not have seeds growing that were given fresh water as a control for the experiment.
G. She placed the container in sunlight only and should have placed another container in the dark as a control for the experiment.
H. She planted ten seeds in the same container when she should have planted only one seed to keep the experiment controlled.
J. She planted the seeds in only one container with soil when she should have used two containers, filling one with sand.

11. Which adaptation helps the scarlet king snake survive in its environment?

A. It reproduces between 4 and 20 eggs.
B. It usually grows to between 2 and 4 feet long.
C. It can live in deserts, wetlands, and grasslands.
D. It looks like the poisonous coral snake to confuse predators.
Earth’s Moon

Rebecca is completing a science fair project on the importance of Earth’s moon. Rebecca collected the following information for her project.

### Moon Data

<table>
<thead>
<tr>
<th>Mean radius</th>
<th>1,737 kilometers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>3.3 grams per cubic centimeter</td>
</tr>
<tr>
<td>Orbit period</td>
<td>27.32 Earth days</td>
</tr>
<tr>
<td>Surface features</td>
<td>Heavily cratered</td>
</tr>
</tbody>
</table>

As the moon orbits Earth, the portion of the moon that is lit by sunlight changes. This causes the phases of the moon. The following table lists information about the phases of the moon for three months.

<table>
<thead>
<tr>
<th>Date</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 4</td>
<td>First quarter</td>
</tr>
<tr>
<td>January 11</td>
<td>Full moon</td>
</tr>
<tr>
<td>January 18</td>
<td>Last quarter</td>
</tr>
<tr>
<td>January 26</td>
<td>New moon</td>
</tr>
<tr>
<td>February 2</td>
<td>First quarter</td>
</tr>
<tr>
<td>February 9</td>
<td>Full moon</td>
</tr>
<tr>
<td>February 16</td>
<td>Last quarter</td>
</tr>
<tr>
<td>February 25</td>
<td>New moon</td>
</tr>
<tr>
<td>March 4</td>
<td>First quarter</td>
</tr>
<tr>
<td>March 11</td>
<td>Full moon</td>
</tr>
<tr>
<td>March 18</td>
<td>Last quarter</td>
</tr>
<tr>
<td>March 26</td>
<td>New moon</td>
</tr>
</tbody>
</table>

The moon causes tides because the force of gravity between Earth and the moon pulls Earth’s ocean water toward the moon. This produces a high tide and a low tide each day. Tidal power is a form of renewable energy that uses the ongoing movement of water to produce electricity.
12. Rebecca wants to add information to her project to show how the moon’s orbit of Earth creates the phases of the moon. Which diagram should Rebecca add?

F. 

G. 

H. 

J. 

13. Which phase of the moon will be observed on April 2?

A. Full moon
B. New moon
C. First quarter
D. Last quarter

14. Based on a continuation of the data table, Rebecca predicts that a full moon will happen on April 9. Which statement explains why this is a reasonable prediction?

F. April 9 is about 27 days after March 11.
G. A full moon happens on the ninth of every month.
H. Full moons happen in the last half of each month.
J. The full moon happens after the last quarter moon.
15. Which landform is produced at the mouth of a river by deposition?

A. Delta
B. Cavern
C. Dome mountain
D. Underwater canyon

16. Helen puts four different spoons in a bowl of hot water. Each spoon is made of one of the following materials:
   
   • Plastic
   • Rubber
   • Silver
   • Wood

Which spoon will be the warmest after two minutes?

F. Plastic, because it is a poor electrical conductor
G. Rubber, because it is a good electrical insulator
H. Silver, because it is a good thermal conductor
J. Wood, because it is a good thermal insulator
17. A construction company wants to find a material that it can use behind basement walls that will help insulate the basement in the winter. The following table shows the pros and cons of the materials the company is considering using.

<table>
<thead>
<tr>
<th>Lining Materials</th>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper sheets</td>
<td>Heavy and secure</td>
<td>Expensive</td>
</tr>
<tr>
<td>Steel bars</td>
<td>Heavy and secure</td>
<td>Hard to install</td>
</tr>
<tr>
<td>Glass panes</td>
<td>Block cold air</td>
<td>Breakable</td>
</tr>
<tr>
<td>Wood planks</td>
<td>Block cold air</td>
<td>Large to work with</td>
</tr>
</tbody>
</table>

Which material would meet the company's needs and be practical?

A. Steel bars, because they are secure and strong
B. Copper sheets, because they are thick and cost a lot
C. Glass panes, because they are clear and keep the room warm
D. Wood planks, because they provide warmth and cover a large area

18. Which of these is an example of sexual reproduction?

F. Production of seeds in flowers
G. Vegetative propagation in leaves
H. Fruiting in fungi
J. Budding in yeast
19. Sheila wants to improve the quality of the soil in her garden. The following table shows the two choices she is thinking about using and their effects on the soil.

<table>
<thead>
<tr>
<th>Methods to Improve Soil Quality</th>
<th>Effects of the Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mix in grass clippings</td>
<td>Recycles nutrients and does not harm the environment</td>
</tr>
<tr>
<td>Put on fertilizer</td>
<td>Provides nutrients but can pollute the environment</td>
</tr>
</tbody>
</table>

Which statement describes why Sheila would select mixing in grass clippings?

A. This choice adds nutrients but will also destroy all the weeds in her garden.
B. The nutrients added to the soil are stronger and work faster using this method.
C. The soil loses nutrients over time, and this will help while not harming the environment.
D. This is the only way to get rid of the grass clippings, and she can store fertilizer to use later.

20. Dominick attached a metal ball to the end of a string and swung it over his head in a circular motion at a constant speed. After several swings, the string broke. The metal ball moved outward and eventually fell to the ground.

Which of these made the metal ball fall to the ground?

F. Mass
G. Gravity
H. Friction
J. Magnetism
21. The following table lists several characteristics of the inner and outer planets of our solar system.

<table>
<thead>
<tr>
<th>Planet Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planet</td>
</tr>
<tr>
<td>Inner Planets</td>
</tr>
<tr>
<td>Mercury</td>
</tr>
<tr>
<td>Venus</td>
</tr>
<tr>
<td>Earth</td>
</tr>
<tr>
<td>Mars</td>
</tr>
<tr>
<td>Outer Planets</td>
</tr>
<tr>
<td>Jupiter</td>
</tr>
<tr>
<td>Saturn</td>
</tr>
<tr>
<td>Uranus</td>
</tr>
<tr>
<td>Neptune</td>
</tr>
</tbody>
</table>

Which statement describes a similarity in the table?

A. The inner and outer planets have the same surface type.
B. The inner and outer planets are the same size in diameter.
C. The inner and outer planets have the same number of planets.
D. The inner and outer planets are the same distance from the sun.
22. Joanne is using the following tool to record temperature data.

Which tool and unit of measure is Joanne using to collect data?

F. A balance in grams
G. A ruler in centimeters
H. A rain gauge in millimeters
J. A thermometer in degrees

23. The following picture shows a sea star.

Two new sea stars can be produced by dividing one sea star in half.

Which type of reproduction is described above?

A. Sexual
B. Cloning
C. Asexual
D. External
24. Jason has collected data about precipitation in his area for two years. The following chart shows his data.

<table>
<thead>
<tr>
<th>Month</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1.5</td>
<td>2.3</td>
</tr>
<tr>
<td>February</td>
<td>1.1</td>
<td>1.4</td>
</tr>
<tr>
<td>March</td>
<td>3.2</td>
<td>3.7</td>
</tr>
<tr>
<td>April</td>
<td>2.8</td>
<td>3.1</td>
</tr>
<tr>
<td>May</td>
<td>1.9</td>
<td>2.3</td>
</tr>
<tr>
<td>June</td>
<td>0.8</td>
<td>1.1</td>
</tr>
<tr>
<td>July</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>August</td>
<td>1.2</td>
<td>0.9</td>
</tr>
<tr>
<td>September</td>
<td>0.3</td>
<td>2.3</td>
</tr>
<tr>
<td>October</td>
<td>0.4</td>
<td>1.2</td>
</tr>
<tr>
<td>November</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>December</td>
<td>0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Which statement describes a prediction that Jason would make based on the past weather and data?

F. More than two inches of precipitation should be found in July.
G. All of the precipitation in January and February will be snow.
H. Future results will show exactly the same amounts as the first year.
J. A pattern will begin to show that most precipitation is in the spring.
25. Much of the electricity in the United States is generated by power plants that either require mining of materials or that release pollution. The following table describes several ways humans can generate electricity.

<table>
<thead>
<tr>
<th>Type of Power</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal-Burning Power Plant</td>
<td>Coal is burned to create steam that causes a turbine to rotate and generate electricity. Coal is a nonrenewable fossil fuel that is found by mining. Coal releases pollutants when burned.</td>
</tr>
<tr>
<td>Nuclear Power</td>
<td>Uranium atoms are split apart, releasing large amounts of energy. Uranium is a mineral that must be mined from Earth. Uranium is radioactive, so it releases particles and energy that are harmful to living things.</td>
</tr>
<tr>
<td>Hydroelectric Power</td>
<td>Moving water causes a turbine to rotate and generate electricity. Water is a renewable resource. Generating electricity from hydroelectric power does not release pollution into the air.</td>
</tr>
<tr>
<td>Trash to Steam Power Plants</td>
<td>Garbage is burned to create steam that causes a turbine to rotate and generate electricity. Garbage is formed as a waste product of human activities. Garbage that is burned does not end up in landfills. Burning garbage does release pollution into the air.</td>
</tr>
</tbody>
</table>

Which way of generating electricity is likely to be the least damaging to the environment?

A. Coal-burning power, because it uses nonrenewable resources and releases air pollution
B. Trash to steam power, because it uses an abundant resource but causes some air pollution
C. Hydroelectric power, because it uses a renewable resource and does not cause air pollution
D. Nuclear power, because it uses nonrenewable mineral resources but does not cause air pollution
26. The following diagram is an oceanic ecosystem.

Human actions have decreased the number of sharks.

Which statement describes what will happen to this food web if the sharks are all destroyed?

F. The barracuda will leave, seeking new food sources.
G. The tube worms and butterfly fish will become dominant.
H. The phytoplankton will increase because there will be no predator.
J. The sea turtles will increase because their predator has been removed.
27. A group of students was given a cactus plant to study. The following table shows four statements the students made about the cactus.

<table>
<thead>
<tr>
<th>Student</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jenny</td>
<td>The plant has a thick stem.</td>
</tr>
<tr>
<td>Carmela</td>
<td>The plant lacks leaves.</td>
</tr>
<tr>
<td>Bianca</td>
<td>The plant has a height of 5.5 centimeters.</td>
</tr>
<tr>
<td>Sadie</td>
<td>The plant is adapted for a dry environment.</td>
</tr>
</tbody>
</table>

Cactus Study

Which student’s statement is an inference?

A. Jenny’s  
B. Carmela’s  
C. Bianca’s  
D. Sadie’s

28. Christa brought home a piece of cooled and hardened lava from her vacation.

Which of these is another name for the type of rock she brought home?

F. Igneous  
G. Magma  
H. Metamorphic  
J. Sedimentary

29. Kelly shines a flashlight at a wall. The beam of light creates a bright spot on the wall. Kelly holds up a piece of black cardboard in front of the light. This stops the beam of light, and it does not shine on the wall.

Which effect does the black cardboard have on the beam of light?

A. Absorption  
B. Brightness  
C. Reflection  
D. Refraction
30. Sam and Dave are testing how soil from three different areas resists erosion. The following steps were used in this investigation:

- Each boy collected one sample from each area.
- Each placed the samples in a separate funnel lined with filter paper.
- Each placed a beaker below the funnel.
- Each poured 250 milliliters of water onto the sample in the funnel.
- Each measured the amount of water that collected in the beaker after 5 minutes.

The following table shows the boys’ data.

<table>
<thead>
<tr>
<th>Quality of Soil Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Soil Sample</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Sam’s Data</td>
</tr>
<tr>
<td>Amount of Water</td>
</tr>
<tr>
<td>Collected in 5</td>
</tr>
<tr>
<td>Minutes (milliliters)</td>
</tr>
<tr>
<td>Dave’s Data</td>
</tr>
<tr>
<td>Amount of Water</td>
</tr>
<tr>
<td>Collected in 5</td>
</tr>
<tr>
<td>Minutes (milliliters)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Area 1</td>
</tr>
<tr>
<td>105</td>
</tr>
<tr>
<td>110</td>
</tr>
<tr>
<td>Area 2</td>
</tr>
<tr>
<td>250</td>
</tr>
<tr>
<td>245</td>
</tr>
<tr>
<td>Area 3</td>
</tr>
<tr>
<td>16</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

Which statement describes the data Sam and Dave collected?

F. The results are accurate because they were recorded in milliliters.

G. The results are incomplete because they used only three soil samples.

H. The results are significant because they can be used to find the average rate of drainage.

J. The results are incorrect because the amount of water collected for each area is not the same.
31. The following graph shows the time and distance data for Lisa’s exercise run. While looking at the data, Tim concludes Lisa stopped during her run.

How do the data support Tim’s conclusion?

A. She ran different distances every 15 minutes.
B. Between 60 and 75 minutes, her total distance stayed the same.
C. At the end of her exercise run, she was less than 10 miles from home.
D. She covered less distance the last 45 minutes than the first 45 minutes.
32. In which layer of Earth can a garden and rocks be found?
   F. Exosphere
   G. Hydrosphere
   H. Lithosphere
   J. Stratosphere

33. An environmental group needs a plan to handle a population of rabbits that is eating endangered plants in the area.

   Which plan will prevent the loss of both the endangered plants and the rabbit population?
   A. Trap and relocate the rabbits.
   B. Put poison around each plant.
   C. Introduce wolves into the area.
   D. Remove the endangered plants.

34. The Bactrian camel has humps made of fat that it can use for energy when needed. The kangaroo rat does not drink water; it gets all it needs from food that it eats.

   Which statement describes how these adaptations affect the Bactrian camel and the kangaroo rat?
   F. Allow them to survive a drought
   G. Increase their ability to catch prey
   H. Allow them to scare their predators
   J. Make them blend into the environment

35. Which term describes when a substance is changed from a liquid to a gas?
   A. Condensation
   B. Evaporation
   C. Filtration
   D. Precipitation
Directions: Use the information below to answer questions 36 through 38.

The Heavy Gate

Saul has a large fence with a gate around his property. The following diagram shows the fence and its measurements.

Fence with Gate

- 5 meters
- 5 meters
The gate is heavy, and the ground below it is rough. Saul would like to find a way to make the gate easier to open and close. He considers using a pulley system, adding a wheel, using an electric motor, or oiling the hinges. Saul wrote the following summary of each option to help him decide which would solve his problem.

**Options to Move the Gate**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulley system</td>
<td>A pulley will be attached to the top of the gate. A bucket of rocks will be attached to the bottom of the pulley. When the gate is opened, the rocks will rise. The rocks will then fall, allowing the gate to close itself.</td>
<td>There will be moderate setup costs. It will only help close the gate. It could be difficult to set up. The weight of the rocks will have to be just right.</td>
</tr>
<tr>
<td>Wheel</td>
<td>A wheel will be attached to the bottom of the gate. The wheel will roll forward when the gate is opened. The wheel will roll backward when the gate is closed.</td>
<td>It will still need effort to open and close the gate. The wheel may not roll well over rough ground.</td>
</tr>
<tr>
<td>Electric motor</td>
<td>An electric motor will be attached to the gate. The motor will open and close the gate.</td>
<td>It will be costly to set up. There will be an ongoing fuel cost. There is a risk that the hot motor could start a grass fire.</td>
</tr>
<tr>
<td>Oiling the hinges</td>
<td>The hinges of the gate will be oiled. The gate will open and close more easily.</td>
<td>There will be an ongoing cost. It will have to be oiled often. It will still need effort to open and close the gate.</td>
</tr>
</tbody>
</table>
36. Which option is an example of using gravitational potential energy to complete a task?

F. Pulley system
G. Wheel
H. Electric motor
J. Oiling the hinges

37. Which of these describes the area that Saul’s fence surrounds and the tool he used to get the measurements?

A. 20 square meters and a ruler
B. 10 square meters and a protractor
C. 50 square meters and a calculator
D. 25 square meters and a tape measure

38. Based on the disadvantages of the electric motor, which item would Saul put between the electric motor and the grass?

F. Rubber mat, because it is an insulator of heat
G. Aluminum foil, because it is a conductor of heat
H. Steel sheet, because it is a conductor of electricity
J. Cardboard box, because it is an insulator of electricity
39. Which organ is part of the respiratory system?
   A. Brain
   B. Heart
   C. Lungs
   D. Stomach

40. In the 1700s, many people were infected with smallpox. The physician Edward Jenner learned that farmers who had the disease called cowpox were less likely to come down with smallpox. Cowpox is a disease that is similar to smallpox but much milder. Jenner decided to do an experiment by injecting cowpox into a person. Later, he exposed the person to smallpox, and the person did not contract the disease.

   Which of these did Jenner’s experiment provide to the scientific and medical community?
   F. A cure for smallpox
   G. A way to find smallpox
   H. A vaccine for smallpox
   J. A weaker form of smallpox

41. The following instrument is used to measure wind direction.

   Which instrument is shown in the picture?
   A. Barometer
   B. Wind vane
   C. Rain gauge
   D. Anemometer
42. The following diagram is an example of a food web.

Which statement explains the role of grass in this food web?

F. The grass makes its own food from the sun, and the food energy is used by other organisms.
G. The grass breaks down oxygen to provide energy to all the other organisms.
H. The grass uses the energy of the other organisms to grow.
J. The grass is a food source for the fox and the weasel.
43. The climate in a mountain environment has been changing over a long period of time. The climate is becoming warmer and the amount of rainfall is decreasing. The lower rainfall is also limiting the amount of plant life available as a food source. A species of goat that lives in this environment has had thinning hair over this period of time.

Which of these describes how thinning hair helps the species of goat survive?

A. By stopping it from overheating
B. By letting it survive on less food
C. By reducing how much water it loses
D. By allowing it to absorb more sunlight

44. Alicia performed the following steps of an investigation:

1) She added a few drops of red food coloring to 50 milliliters of water in a clear plastic bottle.
2) She shook the bottle.
3) She added 20 milliliters of yellow vegetable oil, replaced the cover, and shook the bottle forcefully.
4) She left the bottle undisturbed overnight.

Which of these was the appearance of the mixture the next morning?

F. A yellow liquid layer on top of a red liquid layer
G. Three equal layers of clear, red, and yellow liquids
H. Thick paste on top of a red liquid layer
J. An evenly mixed orange liquid
45. The owner of a coffee shop learns that serving its hot drinks in plastic foam cups has a negative effect on the environment. It is considering several ways to limit this negative effect. The following chart shows four of the shop’s ideas.

### Methods for Limiting the Effect of Plastic Foam Cups

<table>
<thead>
<tr>
<th>Method</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serve coffee in paper cups</td>
<td>Creates waste</td>
</tr>
<tr>
<td>Offer discount to customers for bringing in their own travel mugs</td>
<td>Limits profits</td>
</tr>
<tr>
<td>Encourage customers to drink their coffee in the shop</td>
<td>Requires building on to add more space</td>
</tr>
<tr>
<td>Reuse plastic foam cups</td>
<td>Presents hygiene concerns</td>
</tr>
</tbody>
</table>

Which method should the coffee shop use to meet its goal?

A. Reusing plastic foam cups, because it is a form of recycling that is good for the environment

B. Offering a discount to people for bringing their own mugs, because it will reward those who reuse

C. Serving coffee in paper cups, because it will cause the least amount of change for the customers

D. Encouraging people to drink coffee in the shop, because it will cut the number of cups thrown away
46. The following table lists several characteristics for each of the eight planets in the solar system.

**Planet Characteristics**

<table>
<thead>
<tr>
<th>Planet</th>
<th>Average Distance from Sun (kilometers)</th>
<th>Surface Characteristics</th>
<th>Moons/Rings</th>
<th>Mass Compared to Earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>58,000,000</td>
<td>Rocky</td>
<td>No/No</td>
<td>0.055 x Earth</td>
</tr>
<tr>
<td>Venus</td>
<td>108,000,000</td>
<td>Rocky</td>
<td>No/No</td>
<td>0.815 x Earth</td>
</tr>
<tr>
<td>Earth</td>
<td>150,000,000</td>
<td>Rocky</td>
<td>Yes/No</td>
<td>1 x Earth</td>
</tr>
<tr>
<td>Mars</td>
<td>228,000,000</td>
<td>Rocky</td>
<td>Yes/No</td>
<td>0.10744 x Earth</td>
</tr>
<tr>
<td>Jupiter</td>
<td>778,000,000</td>
<td>Gaseous</td>
<td>Yes/Yes</td>
<td>317.82 x Earth</td>
</tr>
<tr>
<td>Saturn</td>
<td>1,427,000,000</td>
<td>Gaseous</td>
<td>Yes/Yes</td>
<td>95.16 x Earth</td>
</tr>
<tr>
<td>Uranus</td>
<td>2,871,000,000</td>
<td>Gaseous</td>
<td>Yes/Yes</td>
<td>14.371 x Earth</td>
</tr>
<tr>
<td>Neptune</td>
<td>4,498,000,000</td>
<td>Gaseous</td>
<td>Yes/Yes</td>
<td>17.147 x Earth</td>
</tr>
</tbody>
</table>

Which of these is the only planet that is both farther from the sun than Earth and has the same surface characteristics as Earth?

F. Mercury  
G. Venus  
H. Mars  
J. Jupiter
47. Which two human body systems help with the breakdown of food and absorption of nutrients?

A. Circulatory and muscular  
B. Digestive and circulatory  
C. Muscular and reproductive  
D. Reproductive and digestive  

48. Ernst Chain and Howard Florey were two scientists who studied antibiotics. It was known that penicillin was an antibiotic and could be used to treat diseases caused by bacteria. Chain and Florey's work made it possible to make larger quantities of penicillin. This allowed penicillin to be provided to hospitals.

Which statement describes Chain and Florey's main role in the treatment of diseases caused by bacteria?

F. Discovered that only penicillin is needed to treat any disease  
G. Made antibiotics available to more people, providing better care  
H. Found how penicillin worked, allowing all bacteria to be destroyed  
J. Offered more antibiotics, making all diseases safe to be close to and study  

49. Kim observed that the moon on November 4 was in the waxing crescent phase. Which phase of the moon will Kim observe on November 18?

A. Full moon  
B. Last quarter  
C. Waxing gibbous  
D. Waning gibbous  

50. A steel ball has a density much greater than water. Which statement describes the immediate effect of placing a steel ball in a cup of water?

F. The steel ball reacts with the water.  
G. The steel ball floats on top of the water.  
H. The steel ball starts dissolving in the water.  
J. The steel ball sinks to the bottom of the water.
51. The following chart shows the weather in the same city on ten random days last year.

<table>
<thead>
<tr>
<th>Day</th>
<th>Weather during the Last Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 14</td>
<td>32°F and cloudy</td>
</tr>
<tr>
<td>February 22</td>
<td>26°F and rainy</td>
</tr>
<tr>
<td>February 24</td>
<td>39°F and sunny</td>
</tr>
<tr>
<td>May 18</td>
<td>65°F and partly sunny</td>
</tr>
<tr>
<td>June 2</td>
<td>72°F and thunderstorms</td>
</tr>
<tr>
<td>August 11</td>
<td>91°F and sunny</td>
</tr>
<tr>
<td>August 18</td>
<td>93°F and cloudy</td>
</tr>
<tr>
<td>September 1</td>
<td>86°F and rainy</td>
</tr>
<tr>
<td>October 29</td>
<td>69°F and partly sunny</td>
</tr>
<tr>
<td>November 1</td>
<td>55°F and sunny</td>
</tr>
</tbody>
</table>

Which statement describes the weather pattern shown on the chart?

A. Weather is not affected by the month or season.
B. Weather gets warmer throughout the entire year.
C. Weather changes from day to day and by season.
D. Weather changes more often in the winter months.
52. A boat is sailing to the south at a speed of 10 miles per hour. A water current, which is acting on the boat, is moving to the north at a speed of 1 mile per hour.

Which statement describes the effect the current will have on the position and motion of the boat if all other conditions are the same?

F. The boat would move to the east at a higher speed.
G. The boat would move to the south at a lower speed.
H. The boat would move to the north at a lower speed.
J. The boat would move to the west at the same speed.

53. Which of these is an example of a physical change?

A. Melting ice  
B. Rusting metal  
C. Baking a cake  
D. Burning leaves

54. Studies have shown that the populations of many fish are declining due to overfishing. Which plan could help to conserve populations of fish?

F. Allow only one type of fish to be caught.
G. Make larger fishing ships that catch fish in one trip.
H. Use nets with smaller mesh size to catch younger fish.
J. Raise fish that will be used for food in artificial ponds.
55. Carrie is looking at the following diagram.

Which list describes the objects and their type of potential energy?

A. • Battery: gravitational
   • Match: elastic
   • Rock: chemical
   • Slingshot: elastic

B. • Battery: chemical
   • Match: chemical
   • Rock: gravitational
   • Slingshot: elastic

C. • Battery: chemical
   • Match: gravitational
   • Rock: elastic
   • Slingshot: elastic

D. • Battery: elastic
   • Match: gravitational
   • Rock: gravitational
   • Slingshot: chemical