8th Grade Science Blizzard Bag Day 3
Lab Safety, Scientific Inquiry, Lab Safety

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1. *Biological scientists use a variety of methods to gather evidence, or data. If a biologist makes a diorama of a plant cell, what type of investigation did the biologist perform?*

- **A.** *laboratory experiment*
- **B.** *model-building*
- **C.** *observational field study*
- **D.** *collection of specimens*

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2. *Thomas gave a presentation on DNA. During his presentation, he used a diagram as a model for DNA.*

Thomas used a model because

- **A.** *DNA is too small for its structure to be seen with the unaided eye.*
- **B.** *DNA's structure changes too quickly to ever be viewed.*
- **C.** *DNA's structure is unknown so he's presenting a hypothesis.*
- **D.** *DNA is too large to fit into the classroom.*

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3. *A scientist is observing elephants in Asia. He notices that a specific species of moth lands on the faces of the elephants. On closer observation, he sees that the moths irritate the eyes of the elephants and then drink the tears that emerge.*

What scientific question could the scientist ask to explain this?

- **A.** *How can the moths be kept off the elephants' faces?*
- **B.** *Do other species of moths also drink elephant tears?*
- **C.** *all of these*
- **D.** *What nutrients that moths need are in elephant tears?*

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4. *A biologist wants to demonstrate how atoms are combined in a DNA molecule, a geologist wants to demonstrate how mountains are formed as a result of tectonic plate collisions, and a physicist wants to demonstrate wave motion.*

What method would best allow these three different scientists to demonstrate their concepts?

- **A.** *collection of specimens*
- **B.** *laboratory experiment*
- **C.** *observational field study*
- **D.** *model-building*

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5. *Adam wants to find out how pressure affects the force of gravity acting on dust particles in a cloud. Adam designs an experiment in which he places dust particles in a pressure chamber. He is able to adjust the pressure in the chamber from 0 Pascals to 780 Pascals.*

What should Adam use as his control group?

- **A.** *a sample of dust particles at 0 Pascals*
- **B.** *He does not need a control group.*
- **C.** *a sample of dust particles in Earth's atmosphere*
- **D.** *a sample of dust particles at 780 Pascals*

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6. *Nancy would like to find out how air temperature affects the rate of evaporation of water. Which of the following tools should Nancy include in her experiment's design?*

- **A.** *stopwatch and forceps*
- **B.** *thermometer and graduated cylinder*
- **C.** *meter stick and balance*
- **D.** *spring scale and hand lens*

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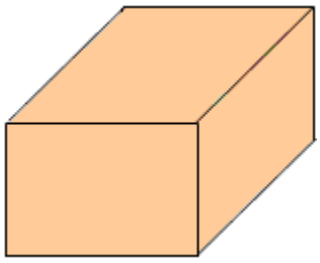
7. *Miguel needs to use an electric hot plate to heat a beaker of water. As he starts to plug the hot plate into the socket, he notices that the cord is frayed.*

What would be the best thing for Miguel to do?

- **A.** *notify the teacher and ask for a new hot plate*
- **B.** *use the hot plate as is since it is only needed for a short time*
- **C.** *wait for the next lab group to be done and then use their hot plate*
- **D.** *wrap the frayed area with electric tape before using it*

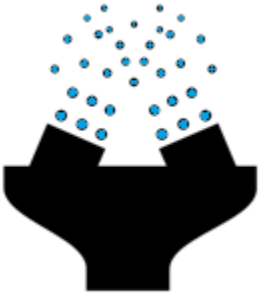
8.



Elvin would like to determine the surface area of the wooden block shown above. Which of the following tools could Elvin use to help determine this?

- **A.** *ruler*
- **B.** *graduated cylinder*
- **C.** *microscope*
- **D.** *thermometer*

9.



In many labs, the image above indicates the location of the

- **A.** *microscopes.*
- **B.** *psychrometer.*
- **C.** *eye wash station.*
- **D.** *fire extinguisher.*

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10. *Nicolas has completed the experimental portion of the lab. Which of these should he do while he works on the analysis questions?*

- **A.** *keep his gloves on*
- **B.** *work on a new experiment he thought of*
- **C.** *talk to his friends who are still collecting data*
- **D.** *keep his safety goggles on*

11. *Silkworms are raised commercially for the silk cocoons that they produce. In ten different trials, Jami's class raised silkworms under different temperatures to see what conditions are best for silkworm caterpillars in their first three instars or stages. In each trial, they began with 30 silkworm eggs.*

The table below shows the data Jami recorded.

Trial Number	Temperature (°F)	Number Surviving to Adulthood
1	*55*	*0*
2	*60*	*1*
3	*65*	*1*
4	*70*	*3*
5	*75*	*6*
6	*80*	*12*
7	*85*	*26*
8	*90*	*19*
9	*95*	*7*
10	*100*	*0*

Which statement below does the data support?

- **A.** *Silkworms can grow successfully at any temperature.*
- **B.** *Temperature is not a condition that affects the survival of silkworms.*
- **C.** *Too much heat or too little heat is bad for the growth of silkworms.*
- **D.** *Ninety degrees is the perfect temperature for growing silkworms.*

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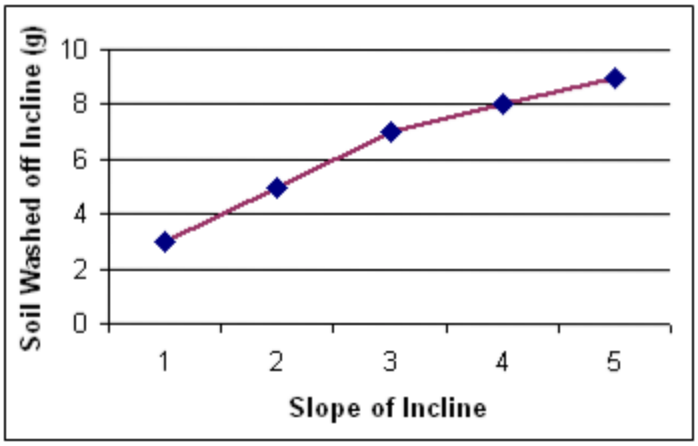
12. *Mrs. Strunk's Earth Science class used an erosion model to investigate the relationship between the slope of a hill, or incline, and the amount of soil that washes off of the incline.*

The class increased the slope of the incline from 1 to 5. Then, they poured 100 ml of water down the incline. Finally, they collected the soil from a tray at the bottom of the incline, dried the soil in an oven, and used a balance to find the mass of the soil. The data from their study is shown below.



Based on the graph, more soil is washed away when

- **A.** *there are fewer rocks in the soil.*
- **B.** *the slope of the incline is less steep.*
- **C.** *the slope of the incline is steeper.*
- **D.** *the soil is made mostly of sand.*

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13. *Sean enjoys studying the stars. He used a photometry tool to calculate several stars' apparent magnitudes (how bright a star looks in the sky). He then researched the stars' distances from Earth. He recorded his results in the table below.*

Star	Apparent Magnitude	Distance from Earth
Sirius A	*-1.47*	*8.6 light-years*
Alpha Centauri A	*-0.01*	*4.4 light-years*
Rigel	*0.12*	*770 light-years*
Procyon	*0.34*	*11 light-years*
Alpha Centauri B	*1.33*	*4.4 light-years*

What conclusions can Sean draw from his chart?

- **A.** *A star's apparent magnitude decreases as its distance from Earth increases.*
- **B.** *A star's apparent magnitude is not directly related to its distance from Earth.*
- **C.** *A star's apparent magnitude decreases if it is very close to another star.*
- **D.** *A star's apparent magnitude increases as its distance from Earth increases.*

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14. *Dr. Burke performs an experiment to determine how plants grow in a variety of temperature and moisture conditions. He runs five trials with five different groups of the same species of plant. The table below shows the results from his experiment.*

Plant Group	Temperature	Moisture	Average Plant Growth
Group 1	*high*	*high*	*2 in*
Group 2	*moderate*	*moderate*	*6 in*
Group 3	*low*	*low*	*0 in*
Group 4	*high*	*moderate*	*3 in*
Group 5	*moderate*	*high*	*4 in*

After finishing the experiment, Dr. Burke explains that heat and moisture have no effect on plant growth. Based on the evidence shown in the table, is his explanation valid?

- **A.** *Yes, his experiment is well designed so his results do not need to support his explanation.*
- **B.** *No, the evidence shown in the table does not support his explanation.*
- **C.** *No, he did not test plants in moderate moisture and moderate temperature conditions.*
- **D.** *Yes, the evidence shown in the table supports his explanation.*