

**Ouachita Parish
Science Leap Review
Answers that were provided are included.**

SI A1

1. What are the experimental steps of a scientific method and describe each step?
2. What is the difference between indirect and direct observation?
3. What is an inference?
4. How is science different from technology?
5. In an experimental groups or control groups, which has the changing variables?

SI A2

1. List the prefixes in order, starting from milli- to kilo- and give the numerical value of each one?
2. What is the part of the experiment that the experimenter measures?
3. How many significant digits are in 0.0012?
4. What is the base unit of time?
5. what is the closeness of data to the actual value?

SI A3

1. List the scenarios of non-safety practices.
2. What are some devices used to mix chemicals in a lab?
3. What are the ways to measure ph?
4. What are three safety practices you do before starting a lab?
5. What is the instrument used to measure mass?

PS A1

1. What ancient peoples used parts of their bodies as measurements units?
Ans. Egyptians
2. List the four units listed on the shown on the Egyptian diagram?
Ans. Cubit, foot, hand, pace
3. What is the original definition of the meter as defined by the French Republic in 1793?
Ans. It is defined to be 1 ten-millionths of the distance from the equator to the north pole as measured through Paris.
4. Under the topic “Metric Chocolate Chip Cookies” what is the required baking time?
Ans. 8 to 10 minutes
5. How many teaspoons are in one tablespoon AND about how many milliliters are in that?
Ans. 3Tsp. and 15 mL

PS A2

What increments are used in measuring on each one of these sections?

- | | |
|-----------------------|--------------------------|
| a. Easy inches | ans. $\frac{1}{2}$ inch |
| b. Medium inches | ans. $\frac{1}{4}$ inch |
| c. Hard inches | ans. $\frac{1}{8}$ inch |
| d. Super Brain inches | ans. $\frac{1}{16}$ inch |

PS B1

1. What subatomic particle has a mass of 1 amu?
2. What subatomic particle has no charge?
3. Who proposed the plum pudding model?
4. Where in the atom is the nucleus located?
5. What property of light is determined by its wavelength?

PS C1

1. Name the group 2 element in period 3.
2. Name the group 16 element in period 2.
3. Name the group 11 element in period 6.

PS C2

1. Which can be separated into simpler substances by a chemical change only?
2. You can only change or add _____ to balance a chemical equation.
3. The fact that iron cannot be changed into a simpler form tells you that iron is _____.
4. In the chemical equation $2\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
5. A substance that contains only one kind of atom is called _____.

PS C3

1. Describe two ways to increase the temperature of a gas?
2. Address the questions in the “rubber band activity” that pertain to temperature change in the molecules.

PS C4

1. Choose three questions to answer from the Boyle’s law activity.

PS D1

1. Which ion is formed when an acid is poured into water?
2. What ion is formed when a base is poured into water?
3. How could you determine an acid from a base?
4. On a pH scale where would you find a strong base?

PS D2

1. Balance these equations:
 $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$ ($2 \text{Na} + \text{Cl}_2 \rightarrow 2 \text{NaCl}$)
 $\underline{\hspace{1cm}} \text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \underline{\hspace{1cm}} \text{H}_2\text{O}$ (2 & 2)
 $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$ ($2 \text{H}_2\text{O}_2 \rightarrow 2 \text{H}_2\text{O} + \text{O}_2$)
2. How many HCl can be obtained from H-H and Cl-Cl? (2)
3. $\text{Al}_2\text{O}_3 \rightarrow \text{Al} + \text{O}_2$: What is the balanced equation for this reaction? ($2 \text{Al}_2\text{O}_3 \rightarrow 2$
 $4 \text{Al} + 3 \text{O}_2$)

PS D3

1. Describe the states of matter given.
2. Discuss Boyles Law.
3. Compare and Contrast Charles and Boyles Law.
4. What would happen to balloon if left in a refrigerator for an hour?

PS E1

1. Which type of track would make the roller coaster ride more exciting?
2. If a roller coaster has no engine, how does it reach high speeds?
3. What is acceleration? Why does a roller coaster have more acceleration than a carousel?
4. What does the amount of energy the roller coaster needs to complete its journey depend on?

PS E2

1. Which of Newton's Laws of Motion is related to momentum?
2. Which of Newton's Laws of Motion relates force to acceleration?
3. Which Newton's Laws of Motion is the law of action/reaction?

PS F1

1. Name the types of simple machines you see in the eggbeater in the photograph?
TAKE THE SELF-TEST TO ANSWER THESE QUESTIONS.

2. A wedge or screw is an example of a _____.
3. A pair of scissors is an example of a(n) _____.
4. The pivot point of a lever is called a _____.
5. In which of these situations is NO work being done?
lifting a box off the floor
carrying a box across the room
pushing a box across the floor
carrying a box upstairs

PS F2

1. According to Newton's 2nd Law, if the force acting on an object stays the same but the mass increases, acceleration _____.
2. Which surface listed on the site has the lowest friction?
3. If the car you are driving crashes into a tree, which of Newton's Laws explains why your body continues forward?
4. What is the product of mass and velocity?

PS G1

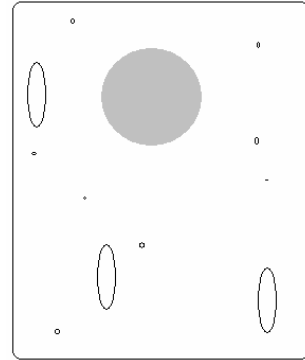
1. How does the speed of light change when the density of the material through which it travels changes?
2. What is the wavelength of the wave in the first "test yourself" diagram (check your answer with the website)?
3. What is frequency?
4. What is the amplitude of the wavelength in the "try it out" diagram (check your answer with the website)?

LS A1

1. What organelles are found only in plant cells? In animal cells?
2. What organelle serves as a primary "packaging" area for molecules that will be distributed throughout the cell?
 - a. Mitochondrion
 - b. Vacuole
 - c. Cytoskeleton
 - d. Golgi
3. What organelle in higher plant cells contains chlorophyll?
 - a. Chloroplasts
 - b. Cytosol
 - c. Secretory vesicles
 - d. Nucleus

LS A2

1. Which organelle would you expect to be most numerous in a human muscle cell? Explain. **ANS: mitochondria- powerhouse of the cell**
2. You observe a *Staphylococcus Aureus* bacterial cell under a microscope. Is this cell a prokaryote or eukaryote? Explain. **ANS: Prokaryote- bacterial so it does not have a nucleus.**
3. What type of cell (prokaryote, eukaryote) is shown on the right? Explain. **ANS: Eukaryote- nucleus is observed.**



4. The *Euglena* is a green protist that swims. What organelle allows it to perform photosynthesis? Explain. **ANS: Chloroplast- organelle that is needed for photosynthesis.**
5. Amino acids are the building blocks of protein. What organelle is responsible for assembling amino acid chains? **ANS: Ribosome**

LS-A3

1. This structure prevents plant cells from rupturing. (cell wall)
2. It's the name of the model for a cell membrane. (fluid mosaic)
3. It wraps things in the cell. (Golgi body)
4. The name given to chromatin when it is coiled and compressed. (chromosome)
5. This term means internal pressure. (turgor)

LS C1

All vertebrates are cold blooded – False

All invertebrates are warm blooded – False

1. A fish is an invertebrate. – False
2. A bird is warm blooded. – True
3. A polar bear is cold blooded. – False
4. A worm is a vertebrate. – False
5. A lizard is cold blooded. – True

LS D1

1. The study of the interactions of living organisms with one another and their physical environment is _____.

Answer: Ecology

2. Succession that occurs on land where plants have not grown before is called
 - a. primary succession
 - b. secondary succession
 - c. primary productivity
 - d. secondary productivity

Answer: a

3. An omnivore is an organism that is
 - a. both autotroph and a producer
 - b. both a carnivore and an herbivore
 - c. both a detritivore and a carnivore
 - d. both a detritivore and an herbivore

Answer: b

4. Producers
 - a. are organisms that consume their food
 - b. are organisms that produce their own food
 - c. are autotrophs
 - d. are heterotrophs
 - e. both b and c

Answer: e

5. When the sea star *Pisaster* was removed from an ecosystem, the diversity of its prey species decreased. Mussels, the superior competitor, crowded seven other prey species out of the ecosystem. Because predation can reduce competition, it can also promote biodiversity. The relative numbers of each of the species in a community is referred to as
 - a. species productivity
 - b. species exclusion
 - c. species diversity
 - d. species co-evolution

Answer: c

LS D2

1. Define succession—the regular progression of a species
2. Habitat—the place where a particular population lives
3. Secondary succession—succession in an area of previous growth
4. Biomass—the dry weight of tissue and other body materials
5. Species diversity—the number of species within an ecosystem

LS E2

1. The synthesis and breakdown of ATP within the cells is controlled by
 - a. Active transport
 - b. The cell membrane
 - c. The nucleus
 - d. *Enzymes*
2. The release of energy in a n organism depends on the conversion of
 - a. AMP to ADP
 - b. ADP to ATP
 - c. *ATP to ADP*
 - d. ATP to AZP
3. The reactants of photosynthesis are
 - a. CO₂ and H₂O
 - b. CO₂ and H₂
 - c. C and O₂
 - d. C and H₂

LS F2

Answers will be your own perception.

1. Find “Stroboscopic Artifacts”
Can you achieve a seemingly stationary gray disk?
2. Find “Munker-White Illusion”
Do the blue bars have identical luminance?
3. Find “T-Illusion”
Does the strength of the illusions depend on orientation?
4. Find “Hering Illusions”
Judge the straightness of the lines on the images.
5. Find “Reverse Phi Motion”
Describe the motorcycle ride.

ES A1

1. Describe the observed motion of the sun in the four seasons.
2. When are the axis perpendicular?
3. What is the reason for the different season?
4. When are we closest to the sun?

SE A1

1. Define carrying capacity.
2. Illustrate with a line graph what could occur if a population exceeds carrying capacity.
3. CRITICAL THINKING: How might the introduction of a predator into the ecosystem affect the reindeer population?

SE B1

1. Define fossil fuel. List three examples.
2. Name two advantages of fossil fuels.
3. **CRITICAL THINKING:** Describe the possible environmental impacts of the continued use of fossil fuels.