

## Biology

1. **Plant Growth**
  - Test how different light conditions affect plant growth.
2. **Invisible Ink**
  - Write with lemon juice and reveal by heating.
3. **Floating Egg**
  - See if adding salt to water makes an egg float.
4. **Homemade Compost**
  - Compare how quickly different types of waste decompose.
5. **Seed Germination**
  - Compare how different types of seeds germinate.
6. **Photosynthesis Experiment**
  - Observe how plants produce oxygen in sunlight.
7. **Microorganisms in Soil**
  - Observe microorganisms in different soil samples.
8. **Effect of Fertilizers**
  - How different fertilizers affect plant growth.
9. **Insect Habitat**
  - Create a habitat and study how insects interact with it.
10. **Heart Rate and Exercise**
  - Measure how exercise affects heart rate.
11. **Flower Dissection**
  - Study the parts of a flower and their functions.
12. **DNA Extraction**
  - Extract DNA from fruits like strawberries.
13. **Mold Growth**
  - Compare how different conditions affect mold growth.
14. **Soil Moisture**
  - Test how soil moisture levels affect plant growth.
15. **Butterfly Life Cycle**
  - Observe and document the stages of a butterfly's life cycle.
16. **Beetroot Color Change**
  - Investigate how cooking affects the color of beetroot.
17. **Animal Behavior**
  - Study how animals react to different stimuli.
18. **Ant Farm**
  - Create an ant farm and observe ant behavior.
19. **Yeast Fermentation**
  - Test how different sugars affect yeast fermentation.
20. **Ecosystem in a Bottle**
  - Create a self-sustaining ecosystem in a bottle.

## Chemistry

- 1. Baking Soda and Vinegar Volcano**
  - Create an eruption with baking soda and vinegar.
- 2. Making Slime**
  - Mix glue and borax to make slime.
- 3. Homemade Water Filter**
  - Clean dirty water using sand, gravel, and charcoal.
- 4. pH Testing**
  - Measure the pH of various liquids.
- 5. Crystal Formation**
  - Grow crystals from a salt or sugar solution.
- 6. Copper and Silver Reaction**
  - Observe the reaction between copper and silver nitrate.
- 7. Oxygen Production**
  - Produce oxygen from hydrogen peroxide using yeast.
- 8. Acid-Base Indicators**
  - Use natural indicators like red cabbage juice to test acids and bases.
- 9. Rusting of Iron**
  - Observe the rusting process of iron in different conditions.
- 10. Reaction Rates**
  - Measure how temperature affects the rate of a chemical reaction.
- 11. Color Changing Solutions**
  - Create solutions that change color with pH changes.
- 12. Density Column**
  - Layer liquids of different densities in a glass.
- 13. Electrolysis of Water**
  - Split water into hydrogen and oxygen gases using electrolysis.
- 14. Endothermic and Exothermic Reactions**
  - Compare reactions that absorb and release heat.
- 15. Vinegar and Baking Soda Balloon Inflation**
  - Inflate a balloon using a reaction between vinegar and baking soda.
- 16. Chemical Garden**
  - Grow colorful crystals in a chemical garden experiment.
- 17. Sugar and Water Solutions**
  - Study how sugar dissolves in water at different temperatures.
- 18. Fermentation**
  - Observe the fermentation process in bread dough.
- 19. Evaporation Rates**
  - Compare how quickly different liquids evaporate.
- 20. Soap and Water Surface Tension**
  - Test how soap affects water's surface tension.

## Physics

1. **Simple Circuit**
  - Build a basic circuit to light up a bulb.
2. **Static Electricity with Balloons**
  - Use a balloon to move small paper pieces.
3. **Water Density Column**
  - Layer different liquids in a glass.
4. **Sound Waves**
  - Measure sound waves using tuning forks.
5. **Pendulum Experiment**
  - Investigate how the length of a pendulum affects its swing time.
6. **Magnetic Field Mapping**
  - Map the magnetic field around a magnet using iron filings.
7. **Optical Illusions**
  - Create and explain different optical illusions.
8. **Lever Mechanics**
  - Explore how levers work using simple machines.
9. **Friction and Surfaces**
  - Compare friction between different surfaces.
10. **Elastic Potential Energy**
  - Measure how stretching a rubber band stores energy.
11. **Refraction of Light**
  - Observe how light bends when passing through different materials.
12. **Simple Machines**
  - Explore how pulleys and gears work.
13. **Heat Conduction**
  - Test how different materials conduct heat.
14. **Rolling Objects**
  - Investigate how different surfaces affect rolling objects.
15. **Magnet Strength**
  - Measure how the strength of magnets changes with distance.
16. **Projectile Motion**
  - Study the motion of objects launched into the air.
17. **Electric Motor**
  - Build a simple electric motor and explore its components.
18. **Air Pressure**
  - Test the effects of air pressure on various objects.
19. **Newton's Laws**
  - Demonstrate Newton's laws of motion with simple experiments.
20. **Energy Transfer**
  - Explore how energy transfers between different systems.

## **Mathematics**

1. **Geometric Shapes**

- Measure and explore properties of different shapes.
- 2. **Statistical Analysis**
  - Analyze data like average test scores.
- 3. **Patterns and Sequences**
  - Explore number patterns and sequences.
- 4. **Math in Architecture**
  - Study geometric shapes in famous buildings.
- 5. **Symmetry in Nature**
  - Find and measure symmetrical patterns in nature.
- 6. **Volume and Surface Area**
  - Calculate the volume and surface area of different 3D objects.
- 7. **Probability Experiments**
  - Use dice or cards to explore basic probability.
- 8. **Graphing Data**
  - Collect and graph data to show trends.
- 9. **Fibonacci Sequence**
  - Identify the Fibonacci sequence in nature and art.
- 10. **Geometry in Art**
  - Analyze how artists use geometric shapes and symmetry.
- 11. **Pythagorean Theorem**
  - Test the Pythagorean theorem with different triangles.
- 12. **Angle Measurement**
  - Measure angles in various geometric shapes and objects.
- 13. **Number Theory**
  - Explore concepts like prime numbers and divisibility.
- 14. **Fractions and Ratios**
  - Investigate the use of fractions and ratios in real-life problems.
- 15. **Mathematical Patterns in Nature**
  - Identify mathematical patterns in natural phenomena.
- 16. **Mathematics of Crystals**
  - Study the symmetry and geometry of crystal structures.
- 17. **Map Projections**
  - Explore different ways to represent the Earth on a flat map.
- 18. **Algebraic Patterns**
  - Investigate patterns in algebraic expressions and equations.
- 19. **Tessellations**
  - Create and study tessellations and their mathematical properties.
- 20. **Statistics in Sports**
  - Analyze sports statistics and compare different teams or players.

## **Environmental Science**

1. **Air Quality Testing**
  - Measure air pollution levels in different areas.

2. **Recycling and Waste Management**
  - Explore the effects of recycling different materials.
3. **Energy Conservation**
  - Compare energy use of different light bulbs (e.g., LED vs. incandescent).
4. **Water Conservation**
  - Measure water usage and find ways to reduce it.
5. **Soil Erosion**
  - Observe how different ground covers affect soil erosion.
6. **Effects of Pollution**
  - Study how pollution affects plant growth.
7. **Climate Change Simulation**
  - Model the effects of greenhouse gases on temperature.
8. **Biodiversity in Local Areas**
  - Identify and document local plant and animal species.
9. **Renewable Energy Sources**
  - Build a simple solar or wind-powered device.
10. **Habitat Preservation**
  - Create a model of a preserved habitat and study its components.
11. **Greenhouse Effect Model**
  - Demonstrate how greenhouse gases trap heat in the atmosphere.
12. **Waste Decomposition**
  - Study how different materials decompose in a compost pile.
13. **Effect of Deforestation**
  - Investigate the impact of deforestation on local ecosystems.
14. **Water Filtration**
  - Test different methods of filtering and purifying water.
15. **Sustainable Agriculture**
  - Explore methods for growing crops sustainably.
16. **Pollution and Wildlife**
  - Study the impact of pollution on local wildlife populations.
17. **Energy Efficiency**
  - Compare the energy efficiency of various household appliances.
18. **Urban Heat Island Effect**
  - Investigate how urban areas are warmer than rural areas.
19. **Green Technology**
  - Explore the use of green technology in reducing environmental impact.
20. **Carbon Footprint Calculation**
  - Calculate and analyze the carbon footprint of different activities.

## **Engineering**

1. **Building Bridges**
  - Construct bridges from materials like popsicle sticks and test their strength.
2. **Robotics**

- Create a simple robot using a kit and explore its functions.
- 3. **Solar Oven**
  - Build a solar oven from a pizza box to cook food.
- 4. **Catapult Design**
  - Design and build a catapult to test how far it can launch objects.
- 5. **Water Rocket**
  - Build a water rocket and measure how high it can fly.
- 6. **Wind Turbine Model**
  - Create a small wind turbine and measure its energy output.
- 7. **Simple Machines**
  - Build and test simple machines like pulleys and levers.
- 8. **Structures and Strength**
  - Build structures using different materials and test their strength.
- 9. **Hydraulic Lift**
  - Construct a simple hydraulic lift to understand hydraulic systems.
- 10. **Gears and Mechanisms**
  - Build a model to explore how gears and mechanisms work.
- 11. **Electric Circuit Design**
  - Create complex electric circuits and explore their applications.
- 12. **Rube Goldberg Machine**
  - Design a Rube Goldberg machine to perform a simple task in a complex way.
- 13. **Water Purification System**
  - Build a system to purify water using various filtration methods.
- 14. **Homemade Hovercraft**
  - Construct a simple hovercraft using a balloon and CD.
- 15. **Automated Plant Watering System**
  - Design a system that waters plants automatically.
- 16. **Robotic Arm**
  - Build and program a basic robotic arm to perform tasks.
- 17. **Renewable Energy Model**
  - Create models of different renewable energy sources and their mechanisms.
- 18. **Mechanical Calculator**
  - Build a mechanical calculator to perform basic arithmetic operations.
- 19. **Simple Hydraulic Machines**
  - Explore the principles of hydraulics by building small machines.
- 20. **Smart Home System**
  - Design a basic smart home system with automated controls for lights and appliances.

These projects are designed to provide a broad range of options across different scientific disciplines, each tailored to be engaging and educational for Class 8 students.