

John Bapst Memorial High School
Biology Entrance Exam
Test Preparation Guide

A note to the student: This preparation guide is given to you in the hope that it will help you prepare for the Freshman Biology Entrance Exam. This guide does not necessarily cover every little detail that might be covered on the exam. Rather, it is intended to give you an overview of the major topics to be covered on the exam so that you may review what you have learned in the science classes you have already taken.

Format of the Exam: The exam will consist of multiple choice and free-response items. Students will be given up to 90 minutes to complete this test.

1. Scientific Methods

- Describe the various steps of the scientific method (questioning, hypothesizing, designing and conducting an experiment, drawing conclusions, and forming scientific theories).
- Discuss how the following differ from each other: hypothesis and scientific theory.
- Identify the dependent, independent and control variable in an experiment.
- Read a scientific article and discuss it critically, giving reasons for your opinion.

2. Making Measurements in the Laboratory

- Identify the correct metric units for length, mass and time.
- Be able to convert measurements from one metric unit to another.
- Determine volumes in a graduated cylinder.
- Identify the major parts of a microscope.

3. Graphing and Interpretation of Data

- Given a correctly drawn graph, discuss what the graph means and draw conclusions from it.

4. Topics from Chemistry

- Identify the major components of the atom (protons, neutrons, and electrons).
- Identify the structure of simple atoms.
- Identify the structure of the nucleus of an atom.
- Be able to determine the atomic number of an element
- Describe what chemical bonding is.
- Identify and describe the phases of matter (solid, liquid, gas).
- Describe the chemical structure of water.
- Describe how cohesion differs from adhesion, especially for water.
- Describe what a solution is.

5. Topics from Biology

- Describe the major characteristics of living organisms.
- Identify the major kingdoms into which living organisms are classified.
- Identify the major parts of the cell and their functions.
- Describe the differences between plant and animal cells.