

## MAP Science

### GRADE 5 - SHORT DESCRIPTORS

#### **Below Basic—(470-625)**

Students identify the relationship between mass and force; classify bodies of water; identify weather instruments and their uses; identify characteristics of the solar system; compare amounts/measurements given in a simple format; identify appropriate tools for simple scientific measurements; identify how technological advances may be helpful to humans.

#### **Basic—(626-668)**

Students explain the relationship between mass and force; describe how specialized body structures help animals survive; match environments to the plants and animals they support; identify environmental problems and find solutions; construct part of a graph; determine the appropriate scientific tool and its function in an investigation; determine how technological advances address problems and enhance life.

#### **Proficient—(669-691)**

Students describe changes in properties of matter; identify uses of simple machines; explain how work is done; identify forces of magnetism; describe the motion of objects; identify plant parts and their functions; classify vertebrates and invertebrates; classify producers, consumers, or decomposers; predict changes in food chains; identify the effects of human activities on other organisms; describe the Sun as a source of light and heat, or the moon as a reflector of light; explain the day/night cycle; identify characteristics and variables of a fair test; interpret data and make predictions; draw conclusions based on evidence; distinguish between man-made and natural objects; apply problem solving skills to a situation.

#### **Advanced—(692-855)**

Students identify energy transformations; predict the effect of heat energy on water; diagram a complete electrical circuit; predict how simple machines affect the force needed to do work; describe the effects of weathering and erosion on Earth's surface; describe relationships in weather data; explain how the Sun's position and the length and position of shadows relate to the time of day; interpret and apply knowledge from a data table; identify appropriate steps, tools and metric units in an investigation; construct a graph and plot data; formulate a question for an investigation.

## MAP Science

### GRADE 8 - SHORT DESCRIPTORS

#### **Below Basic—(540-670)**

Students identify simple terms related to matter and energy; demonstrate beginning understanding of properties of light and how it travels; identify structures of plants and animals needed for survival; identify levels of organization in multicellular organisms; read simple graphs and make simple data comparisons.

#### **Basic—(671-702)**

Students identify an example of a force; demonstrate simple understanding of how traits are passed from one generation to the next; have a basic understanding of climate; identify a simple hypothesis; recognize a trend in a data table; demonstrate some awareness of how various factors influence and are influenced by science and technology.

#### **Proficient—(703-734)**

Students classify types of motion; calculate the speed of an object; demonstrate simple understanding of life processes; classify and/or show relationships between organisms; explain how adaptations help organisms survive; explain how species are affected by environmental change; understand and describe a food web; explain rock and fossil evidence of changes in the Earth; explain how Earth's systems interact; draw conclusions from tables or graphs; demonstrate basic understanding of the solar system; recognize the need for, and calculate, averages; understand the importance of constants in investigations; use appropriate tools and methods to collect data; describe tools and discoveries that advance scientific knowledge.

#### **Advanced—(735-895)**

Students explain the physical and chemical properties of matter; apply knowledge of energy and energy transfer; demonstrate understanding of physical and chemical processes of organisms; evaluate the effects of balanced and unbalanced forces; predict the impact of environmental change in ecosystems; justify how adaptations help organisms survive; demonstrate understanding of the water cycle; compare and contrast weather and climate; explain the cause of seasons on Earth; demonstrate understanding of the solar system; apply the concept of light years; construct a complete graph; evaluate experimental design; create testable questions and hypotheses; apply awareness of the influence of science and technology in society.

## MAP Science

### GRADE 11 - SHORT DESCRIPTORS

#### **Below Basic—(550-701)**

Students describe that matter is made up of particles too small to be seen; describe how the mass of an object affects its motion; identify that organisms are made up of cells; define a species in terms of ability to reproduce; identify major gasses that make up the atmosphere; identify an advantage or disadvantage of tools used to study the universe; identify a valid justification of a conclusion; communicate minimal information about the data collected in an experiment; identify how one environmental factor can be impacted by technology.

#### **Basic—(702-728)**

Students identify some properties that can be used to classify substances; perform basic calculations related to force and motion of an object when given a formula; identify and describe cell structures and their functions; explain community interaction to maintain a balanced ecosystem; identify the processes involved in the rock cycle; identify a property of the electromagnetic spectrum as it relates to the universe; select appropriate investigation methods; use data to formulate an explanation; describe a reason theories change.

#### **Proficient—(729-769)**

Students describe properties and changes in matter; explain gravitational force between objects; apply Newton's Laws of Motion; describe the relationship between force and work; describe photosynthesis and cellular respiration; describe energy flow in a food web; explain natural selection; identify processes of the water cycle; explain the motion of the Earth, moon and Sun; describe the role of the electromagnetic spectrum in the universe; design scientific investigations; analyze data, form conclusions and communicate results; identify the constants and variables in an investigation required for reliable results; create testable hypotheses; identify technology used to increase scientific knowledge.

#### **Advanced—(770-970)**

Students explain energy and energy transfer; apply an understanding of the Periodic Table; apply the Law of Conservation of Matter and Energy; evaluate the Law of Gravity; compare the efficiency of machines; apply the principles of Mendelian genetics; explain cell division; analyze genetic diversity; predict changes in a food web; explain factors of climate; justify land use based on natural resources; explain the processes and energy sources of plate tectonics; provide evidence for the revolution and rotation of Earth; construct data tables and graphs; justify constants and variables; design a valid scientific investigation; gather and interpret qualitative and quantitative data; determine the effects of technology.