MOSCOW SCHOOL DISTRICT
CURRICULUM GUIDE
Subject/Course: Science
Grade 5

Students are expected to know content and apply skills from previous grades.

Standard 1: Nature of Science

Students identify the components of a system and explain their relationship to the whole. Students read, execute, and give technical instructions.

Cognitive Level (CL) codes:
- B: Memorize
- C: Perform procedures
- D: Demonstrate understanding
- E: Conjecture, generalize, prove
- F: Solve non-routine problems, make connections

Goal – The student will:	*Objectives (to be reached by the end of fifth grade)*	*Samples of Applications*	*Curriculum Materials (including technological resources)*	*Key Vocabulary for Standard 1*
Goal 1.1: Understand Systems, Order, and Organization	• 5.S.1.1.1 Compare and contrast different systems. (603.01.a) **CL: E** **Content Limit: Compare one item to another; do not make multiple-item comparisons. Systems tested should be familiar to students. Systems that could be used to develop items include classroom systems (stations, seating plans, built-in operation schemes), games (tag, kick ball), school systems (student: teacher: principal), the water cycle, and body systems (skeletal, digestive, respiratory)**	• Ecosystems Kit	• Variables (FOSS) • Mixtures and Solutions (FOSS)	• analyze • concept • control • data • evidence • experiment • form and function • hypothesis • inference • investigation • measure • metric • model • Observations • predications • procedures • scientific explanation • SI system • Systems • U.S. customary system of measurement • Variable • cells • concepts • conclusion • controls • critical thinking
Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	• 5.S.1.2.1 Use observations and data as evidence on which to base scientific explanations and predictions. (603.02.a) **CL: E** **Content Limit: Explanations and predictions are limited to**	• FOSS Kits: Variables, Landforms, Mixtures, Ecosystems		

	directly described or illustrated information in the item. • 5.S.1.2.2 Explain the difference between observations and inferences. (603.02.b) **Content Limit: Assessed in the classroom, not on the ISAT.** • 5.S.1.2.3 Use models to explain or demonstrate a concept. (603.02.c) **Content Limit: Assessed in the classroom, not on the ISAT.**	• FOSS Kits • FOSS Landforms, Investigations		• data • evaluate • evidence • function • hypothesis • inference • investigation • metric measurements • models • observation • organ systems • organism • organs • predications • scientific explanations • scientific procedures • stable • system • technical instructions • techniques • tissues • tools • variables • dependent variable • independent variable
Goal 1.3: Understand Constancy, Change, and Measurement	• 5.S.1.3.1 Analyze changes that occur in and among systems. (603.03.b) **CL: E** **Content Limit: Analysis is limited to changes directly described or illustrated in the item.** • 5.S.1.3.2 Measure in both U.S. Customary and International System of Measurement (metric system) units with an emphasis on the metric system. (603.03.c) **CL: C** **Content Limit: Measurement should be in millimeters, centimeters, grams.**	• Ecosystems Kit • Mixtures and Solutions, Variables Kits		
Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State No objectives at this grade level.				
Goal 1.5: Understand Concepts of Form and Function	• 5.S.1.5.1 Explain how the shape or form of an object or system is frequently related to its use and/or function. (603.05.a) **Content Limit: Assessed in the classroom, not on the ISAT.**	• Variables Kit		

Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	• 5.S.1.6.1 Write and analyze questions that can be answered by conducting scientific experiments. (604.01.a) **CL: C** **Content Limit: Content should be limited to questions including the amount of water required by bean seedlings grown in small containers for healthy growth, and the conditions necessary for painted lady butterfly larva to pupate.**	• Variables FOSS Kit		
	• 5.S.1.6.2 Conduct scientific investigations using a control and variables. (60-4.01.b) **Content Limit: Assessed in the classroom, not on the ISAT.**	• FOSS Kits		
	• 5.S.1.6.3 Select and use appropriate tools and techniques to gather and display data. (604.01.c) **CL: C** **Content Limit: Content should be limited to metric rulers, bar graphs, and basic tables.**	• Variables and all other FOSS kits		
	• 5.S.1.6.4 Use evidence to analyze data in order to develop descriptions, explanations, predictions, and models. (604.01.d) **CL: E** **Content Limit: Students should be presented a set of evidence or series of observations and be asked to derive information or make predictions based on this evidence.**	• All FOSS Kits		
	• 5.S.1.6.5 State a hypothesis based on observations. (604.01.e) **CL: E** **Content Limit: When provided sequential**	• Variables FOSS Kit		

	graphics, students will be able to select the most logical hypothesis from a list of possible options. • 5.S.1.6.6 Compare alternative explanations and predictions. (6-4.01.f) **CL: E** **Content Limit: When provided sequential graphics and a set of possible explanations, students will be able to select the most logical explanation from a list of possible options.** • 5.S.1.6.6 Communicate scientific procedures and explanations. (604.01.g) **Content Limit: Assessed in the classroom, not on the ISAT.**	• All FOSS kits • All FOSS kits		
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors - No objectives at this grade level.				
Goal 1.8: Understand Technical Communication	• 5.S.1.8.1 Read and follow technical instructions. (613.02a) **Content Limit: Assessed in the classroom, not on the ISAT.**	• All FOSS kits		

Standard 2: Physical Science

Students explain the difference between an element, a mixture, and a compound.

Cognitive Level (CL) codes:
- B: Memorize
- C: Perform procedures
- D: Demonstrate understanding
- E: Conjecture, generalize, prove
- F: Solve non-routine problems, make connections

Goal – The student will:	*Objectives (to be reached by the end of fifth grade)*	*Samples of Applications*	*Curriculum Materials (including technological resources)*	*Key Vocabulary for Standard 2*
Goal 2.1: Understand the Structure and Function of Matter and	• 5.S.2.1.1 Describe the differences among elements, compounds and mixtures. (605.01.a) **CL: E**	• Mixtures and Solutions FOSS kits	• Mixtures and Solutions (FOSS)	• Compounds • Elements • gas • liquids • mixtures

Molecules and Their Interactions	**Content Limit: Explanations and predictions are limited to directly described or illustrated information in the item.** • 5.S.2.1.2 Compare the physical differences among solids, liquids, and gases. (605.01.c) **CL: D** **Content Limit: Students should be able to recognize the differences in molecular distance between a solid, a liquid, and a gas, as well as differences in basic molecular motion.** • 5.S.2.1.3 Explain the nature of physical change and how it relates to physical properties (605.01.d) **CL: D** **Content Limit: Students should be able to recognize the change(s) in physical properties that take place when physical changes occur including ice melting into water and water being heated into steam.**	• Mixtures and Solutions FOSS kits • Mixtures and Solutions FOSS kits		• physical change • physical properties • solids • compare • compound • contrast • density • element • forces • friction • gas • gravity • liquid • matter • mixture • molecules • physical change • physical properties • property • solid • water vapor
Goal 2.2: Understand Concepts of Motion and Forces - No objectives at this grade level				
Goal 2.3: Understand the Total Energy in the Universe is Constant - No objectives at this grade level.				
Goal 2.4: Understand the Structure of Atoms - No objectives at this grade level.				
Goal 2.5: Understand Chemical Reactions - No objectives at this grade level.				

Standard 3: Biology

Students explain the differences between plant and animal cells. Students understand that plants convert energy. Students know that traits are passed from parents to offspring.

Cognitive Level (CL) codes:
- B: Memorize
- C: Perform procedures
- D: Demonstrate understanding
- E: Conjecture, generalize, prove
- F: Solve non-routine problems, make connections

Goal – The student will:	*Objectives (to be reached by the end of fifth grade)*	*Samples of Applications*	*Curriculum Materials (including technological resources)*	*Key Vocabulary for Standard 3*
Goal 3.1: Understand the Theory of Biological Evolution - No objectives at this grade level.				• cells • compare and contrast • energy • photosynthesis • traits • abundance • atoms • biosphere • carnivores • cells • chemical reactions • components • cycle • decomposers • distribution • dominant traits • ecosystems • energy • energy flow • function • herbivores • inheritance • limits to resources • living • molecules • natural selection • nonliving • organ systems • organisms • photosynthesis • recessive traits • relationships • resources • species • tissues organs
Goal 3.2: **Understand the Relationship between Matter and Energy in Living Systems**	• 5.S.3.2.1 Communicate how plants convert energy from the sun through photosynthesis. (608.01.a) **Content Limit: Assessed in the classroom, not on the ISAT.**	• Ecosystems Kit		
Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	• 5.S.3.3.1 Compare and contrast the structural differences between plant and animal cells. (606.01.b) **CL: E** **Content Limit: Address only the readily observable organelles: cell wall, cell membrane, and chloroplast.** • 5.S.3.3.2 Explain the concept that traits are passed from parents to offspring. (606.01.c) **CL: D** **Content Limit: Traits should be limited to clearly observable characteristics including eye color, hair color and texture, and widow's peak.**	• Not addressed in any kit • Not addressed in any kit		

Standard 4: Earth and Space Systems

Students describe the dynamic changes that occur on Earth.

Cognitive Level (CL) codes:
- B: Memorize
- C: Perform procedures
- D: Demonstrate understanding
- E: Conjecture, generalize, prove
- F: Solve non-routine problems, make connections

Goal – The student will:	*Objectives (to be reached by the end of fifth grade)*	*Samples of Applications*	*Curriculum Materials (including technological resources)*	*Key Vocabulary for Standard 4*
Goal 4.1: Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth Systems	• 5.S.4.1.1 Describe the interactions among the solid earth, oceans, atmosphere (erosion, climate, tectonics and continental drift). (609.01.a) **CL: D** **Content Limit: The role wind and water play in erosion, different cloud types, and the formation of earthquakes and volcanoes can all be addressed.**	• Landforms	• Landforms (FOSS)	• atmosphere • classification • climate • continental drift • erosion • rock cycle • tectonics • atmosphere • cirrus cloud • climate • cumulus cloud • organism • stratus cloud • water cycle
Goal 4.2: Understand Geo-chemical Cycles and Energy in the Earth System	• 5.S.4.2.1 Explain the rock cycle and identify the three classifications of rocks. (609.02.a) **CL: D** **Content Limit: How sedimentary, igneous, and metamorphic rocks are formed.**	• Landforms		

Standard 5: Personal and Social Perspectives; Technology

Students use the scientific method to identify environmental issues.

Cognitive Level (CL) codes:
- B: Memorize
- C: Perform procedures
- D: Demonstrate understanding
- E: Conjecture, generalize, prove
- F: Solve non-routine problems, make connections

Goal – The student will:	*Objectives (to be reached by the end of fifth grade)*	*Samples of Applications*	*Curriculum Materials (including technological resources)*	*Key Vocabulary for Standard 5*
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	• 5.S.5.1.1 Identify issues for environmental studies. (611.01.a) **CL: E** **Content Limit: Content should be limited to events in the local school or community environment including food waste from the hot lunch program, storm runoff entering a local stream, and the impact on grass color due to uneven watering of the school yard.**	• Ecosystems		• environment • nonrenewable • renewable • technology • alternative energy • technology
Goal 5.2: Understand the Relationship between Science and Technology	• 5.S.5.2.1 Describe how science and technology are part of a student's life. (610.01.a) **Content Limit: Assessed in the classroom, not on the ISAT.** • 5.S.5.2.2 List examples of science and technology. (610.01.b) **Content Limit: Assessed in the classroom, not on the ISAT.**	• Not in kits • Landforms • G.P.S.		
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	• 5.S.5.3.1 Identify the differences between renewable and nonrenewable resources. (611.03.a) **CL: E** **Content Limit: Content should be limited to issues within a school or local community including**	• Ecosystems		

	recycling programs for paper and aluminum and landfill issues.			

Terms of significance that are not derived from a particular standard

adaptation
adapted
additive
allele
aquarium
arteries
artificial light
astronomy
ATP
biology
cell wall
cellular respiration
Celsius
cementing
centimeter
chemistry
chloroplasts
chromosomes
clotting
compacting
composition
consumer
convert
crust
deoxygenated
diaphragm
display data
dominant
dominant
ecology
ecosystem
endoplastic reticulum
engineering
environmental
erosion
excessive
extend
flex
flexible
flow chart
fossilized
geology
graduated cylinder
guard cells
heterozygous
hibernating
homozygous
hydroelectric
indicator solution
inner core
juvenile
larva
larvae
manipulated variable
mantle
manufacturing
mass
maturity
measured variable
membrane
millimeter
mitochondria
mitosis
molecules
mutation
natural light
nucleus
nutrients
nutrients
omnivores
organelle
osmosis
outer core
oxygen
oxygenated
pH indicator
phase
phloem
physics
population
pores
precipitation
predator
processes
producer
protein
rate
recessive
recessive
recyclable
rigid
sediment
standard
state
succession
trait
tropism
vacuole
vaporize
veins
Venn diagram
vital
weathering
xylem