

IPC Elementary Science PMP Determination (minimal criteria)

Kindergarten

Meeting minimal criteria should be determined based on the successful application of the following benchmarks.

Body of Knowledge	Standard	Benchmark
Nature of Science 5 out of 5	SC.K.N.1.1	Collaborate with a partner to collect information.
	SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses.
	SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted.
	SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features.
	SC.K.N.1.5	Recognize that learning can come from careful observation.
Earth/Space 4 out of 6	SC.K.E.5.1	Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up.
	SC.K.E.5.2	Recognize the repeating pattern of day and night.
	SC.K.E.5.3	Recognize that the Sun can only be seen in the daytime.
	SC.K.E.5.4	Observe that sometimes the Moon can be seen at night and sometimes during the day.
	SC.K.E.5.5	Observe that things can be big and things can be small as seen from Earth.
	SC.K.E.5.6	Observe that some objects are far away and some are nearby as seen from Earth.
Physical Science 3 out of 5	SC.K.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light) and texture.
	SC.K.P.9.1	Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.
	SC.K.P.10.1	Observe that things that make sound vibrate.
	SC.K.P.12.1	Investigate that things move in different ways, such as fast, slow, etc.
	SC.K.P.13.1	Observe that a push or a pull can change the way an object is moving.
Life Science 2 out of 3	SC.K.L.14.1	Recognize the five senses and related body parts.
	SC.K.L.14.2	Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life.
	SC.K.L.14.3	Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.

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1st Grade

Meeting minimal criteria should be determined based on the successful application of the following benchmarks.

Body of Knowledge	Standard	Benchmark
Nature of science out of 4	SC.1.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.
	SC.1.N.1.2	Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.
	SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations conducted.
	SC.1.N.1.4	Ask "how do you know?" in appropriate situations.
Earth/Space science out of 7	SC.1.E.5.1	Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky.
	SC.1.E.5.2	Explore the Law of Gravity by demonstrating that Earth's gravity pulls any object on or near Earth toward it even though nothing is touching the object.
	SC.1.E.5.3	Investigate how magnifiers make things appear bigger and help people see things they could not see without them.
	SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun.
	SC.1.E.6.1	Recognize that water, rocks, soil, and living organisms are found on Earth's surface.
	SC.1.E.6.2	Describe the need for water and how to be safe around water.
	SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly.
Physical science out of 3	SC.1.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float.
	SC.1.P.12.1	Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.
	SC.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull.
Life Science out of 5	SC.1.L.14.1	Make observations of living things and their environment using the five senses.
	SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers.
	SC.1.L.14.3	Differentiate between living and nonliving things.
	SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.
	SC.1.L.17.1	Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.

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2nd Grade

Meeting minimal criteria should be determined based on the successful application of the following benchmarks.

Body of Knowledge	Standard	Benchmark
Structure of Science out of 6	SC.2.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.
	SC.2.N.1.2	Compare the observations made by different groups using the same tools.
	SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.
	SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated.
	SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).
	SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.
Earth/Space Science out of 8	SC.2.E.6.1	Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes.
	SC.2.E.6.2	Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed.
	SC.2.E.6.3	Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.
	SC.2.E.7.1	Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.
	SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.
	SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate).
	SC.2.E.7.4	Investigate that air is all around us and that moving air is wind.
SC.2.E.7.5	State the importance of preparing for severe weather, lightning, and other weather related events.	
Physical Science out of 12	SC.2.P.8.1	Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets.
	SC.2.P.8.2	Identify objects and materials as solid, liquid, or gas.
	SC.2.P.8.3	Recognize that solids have a definite shape and that liquids and gases take the shape of their container.
	SC.2.P.8.4	Observe and describe water in its solid, liquid, and gaseous states.
	SC.2.P.8.5	Measure and compare temperatures taken every day at the same time.
	SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and sizes.
	SC.2.P.9.1	Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration.
	SC.2.P.10.1	Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes, and power their cars.
	SC.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects.
	SC.2.P.13.2	Demonstrate that magnets can be used to make some things move without touching them.
	SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up.
SC.2.P.13.4	Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.	
Life Science out of 4	SC.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions.
	SC.2.L.16.1	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.
	SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.
	SC.2.L.17.2	Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.

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3rd Grade

Meeting minimal criteria should be determined based on the successful application of the following benchmarks.

Body of Knowledge	Standard	Benchmark
Nature of Science out of 9	SC.3.N.1.1	Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
	SC.3.N.1.2	Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups.
	SC.3.N.1.3	Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.
	SC.3.N.1.4	Recognize the importance of communication among scientists.
	SC.3.N.1.5	Recognize that scientists question, discuss, and check each others' evidence and explanations.
	SC.3.N.1.6	Infer based on observation.
	SC.3.N.3.1	Recognize that words in science can have different or more specific meanings than their use in everyday language; for example, energy, cell, heat/cold, and evidence.
	SC.3.N.3.2	Recognize that scientists use models to help understand and explain how things work.
	SC.3.N.3.3	Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations.
Earth/Space Science out of 6	SC.3.E.5.1	Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light.
	SC.3.E.5.2	Identify the Sun as a star that emits energy; some of it in the form of light.
	SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth.
	SC.3.E.5.4	Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome.
	SC.3.E.5.5	Investigate that the number of stars that can be seen through telescopes is dramatically greater than those seen by the unaided eye.
	SC.3.E.6.1	Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.
Physical Science out of 10	SC.3.P.8.1	Measure and compare temperatures of various samples of solids and liquids.
	SC.3.P.8.2	Measure and compare the mass and volume of solids and liquids.
	SC.3.P.8.3	Compare materials and objects according to properties such as size, shape, color, texture, and hardness.
	SC.3.P.9.1	Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.
	SC.3.P.10.1	Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.
	SC.3.P.10.2	Recognize that energy has the ability to cause motion or create change.
	SC.3.P.10.3	Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.
	SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed.
	SC.3.P.11.1	Investigate, observe, and explain that things that give off light often also give off heat.
SC.3.P.11.2	Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together.	
Life Science out of 6	SC.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.
	SC.3.L.14.2	Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.
	SC.3.L.15.1	Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.
	SC.3.L.15.2	Classify flowering and nonflowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics.
	SC.3.L.17.1	Describe how animals and plants respond to changing seasons.
	SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food.

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4th Grade

Meeting minimal criteria should be determined based on the successful application of the following benchmarks.

Body of Knowledge	Standard	Benchmark
Nature of Science out of 10	SC.4.N.1.1	Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
	SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.
	SC.4.N.1.3	Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence.
	SC.4.N.1.4	Attempt reasonable answers to scientific questions and cite evidence in support.
	SC.4.N.1.5	Compare the methods and results of investigations done by other classmates.
	SC.4.N.1.6	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.
	SC.4.N.1.7	Recognize and explain that scientists base their explanations on evidence.
	SC.4.N.1.8	Recognize that science involves creativity in designing experiments.
	SC.4.N.2.1	Explain that science focuses solely on the natural world.
	SC.4.N.3.1	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.
Earth/Space Science out of 11	SC.4.E.5.1	Observe that the patterns of stars in the sky stay the same although they appear to shift across the sky nightly, and different stars can be seen in different seasons.
	SC.4.E.5.2	Describe the changes in the observable shape of the moon over the course of about a month.
	SC.4.E.5.3	Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.
	SC.4.E.5.4	Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.
	SC.4.E.5.5	Investigate and report the effects of space research and exploration on the economy and culture of Florida.
	SC.4.E.6.1	Identify the three categories of rocks: igneous, (formed from molten rock); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure).
	SC.4.E.6.2	Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks.
	SC.4.E.6.3	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.
	SC.4.E.6.4	Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).
	SC.4.E.6.5	Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).	
Physical Science out of 13	SC.4.P.8.1	Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets.
	SC.4.P.8.2	Identify properties and common uses of water in each of its states.
	SC.4.P.8.3	Explore the Law of Conservation of Mass by demonstrating that the mass of a whole object is always the same as the sum of the masses of its parts.
	SC.4.P.8.4	Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.
	SC.4.P.9.1	Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.
	SC.4.P.10.1	Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion.
	SC.4.P.10.2	Investigate and describe that energy has the ability to cause motion or create change.
	SC.4.P.10.3	Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates.
	SC.4.P.10.4	Describe how moving water and air are sources of energy and can be used to move things.
	SC.4.P.11.1	Recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature.
	SC.4.P.11.2	Identify common materials that conduct heat well or poorly.
	SC.4.P.12.1	Recognize that an object in motion always changes its position and may change its direction.
SC.4.P.12.2	Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds.	

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Science	SC.4.L.16.1	Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.
out of 8	SC.4.L.16.2	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.
	SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning.
	SC.4.L.16.4	Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.
	SC.4.L.17.1	Compare the seasonal changes in Florida plants and animals to those in other regions of the country.
	SC.4.L.17.2	Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.
	SC.4.L.17.3	Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.
	SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.

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5th Grade

Meeting minimal criteria should be determined based on the successful application of the following benchmarks.

Body of Knowledge	Standard	Benchmark
Nature of Science out of 8	SC.5.N.1.1	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
	SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation.
	SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.
	SC.5.N.1.4	Identify a control group and explain its importance in an experiment.
	SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."
	SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation.
	SC.5.N.2.1	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.
	SC.5.N.2.2	Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.
Earth/Space Science out of 10	SC.5.E.5.1	Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way.
	SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.
	SC.5.E.5.3	Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.
	SC.5.E.7.1	Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.
	SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.
	SC.5.E.7.3	Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.
	SC.5.E.7.4	Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
	SC.5.E.7.5	Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.
	SC.5.E.7.6	Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.
SC.5.E.7.7	Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.	
Physical Science out of 15	SC.5.P.8.1	Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.
	SC.5.P.8.2	Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.
	SC.5.P.8.3	Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.
	SC.5.P.8.4	Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.
	SC.5.P.9.1	Investigate and describe that many physical and chemical changes are affected by temperature.
	SC.5.P.10.1	Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.
	SC.5.P.10.2	Investigate and explain that energy has the ability to cause motion or create change.
	SC.5.P.10.3	Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects.
	SC.5.P.10.4	Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.
	SC.5.P.11.1	Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop).
	SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not.
	SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.
	SC.5.P.13.2	Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.
	SC.5.P.13.3	Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.
SC.5.P.13.4	Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.	

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Science	SC.5.L.14.1	Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.
out of 4	SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support – some with internal skeletons others with exoskeletons -- while some plants have stems for support.
	SC.5.L.15.1	Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.
	SC.5.L.17.1	Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.