

Checklist for Science Curriculum for 6-8

STRAND	STANDARD	BENCHMARK	6	7	8	
I. Constructing new scientific knowledge	Ask questions.	1. Generate scientific questions on world based on observation.				
	Design/conduct investigations.	2. Design and conduct investigations.				
		3. Use tools and equipment appropriate to scientific investigations.				
		4. Use metric measurement devices to provide consistency in investigations.				
Learn from sources	5. Use sources of information in support of scientific investigations.					
Communicate findings	6. Write and follow procedures in form of step-by-step directions, formulas, flow diagrams, sketches.					
II. Reflecting on scientific knowledge	Analyze claims.	1. Evaluate the strengths and weaknesses of claims, arguments, or data. 2. Describe limitations in personal knowledge.				
	Relate science to other ways of knowing.	3. Show how common themes of science, math, and technology apply in real world contexts.				
	Show how science affects society.	4. Describe the advantages and risks of new technologies.				
		5. Develop awareness of and sensitivity to the natural world.				
6. Recognize contributions made by persons from diverse cultures and backgrounds.						
III. Using scientific knowledge in Life Science	1. <i>Cells</i> Explain cells.	1. Demonstrate evidence that all parts of living things are made of cells.				
		2. Explain why and how selected specialized cells are needed by plants and animals.				
	2. <i>Organization of living things</i> Classify systems to describe	1. Compare and contrast and classify organisms into major groups on basis of structure.				
		2. Describe life cycle of a flowering plant.				
	Compare and contrast life cycles	3. Describe evidence that plants make and store food.				
	Investigate/explain energy.	4. Explain how selected systems and processes work together in animals.				
	3. <i>Heredity</i> Investigate.	1. Describe how characteristics of living things are passed on through generations.				
		2. Describe how heredity and environment may influence/determine characteristics of an organism.				
	Explain species differences.	3. (none)				
	4. <i>Evolution</i> Explain theory testing.	1. Describe how scientific theory traces possible evolutionary relationships among present and past life forms.				
		2. Explain how new traits might become established in a population and how species become extinct.				
	5. <i>Ecosystems</i> Explain how parts are related and interact.	1. Describe common patterns of relationships among populations.				
		2. Describe how organisms acquire energy directly or indirectly from sunlight.				
Explain energy distribution.	3. Predict the effects of changes in one population in a food web on other populations.					
Investigate changes over time.	4. Describe the likely succession of a given ecosystem over time.					

Checklist for Science Curriculum for 6-8

	Describe materials cycling in ecosystem.					
	Analyze how humans and environment interact.	5. Explain how humans use and benefit from plant and animal materials.				
		6. Describe ways in which humans alter the environment.				
IV. Using scientific knowledge in Physical Science	1. <i>Matter and Energy</i> Measure/describe things around us.	1. Describe and compare objects in terms of mass, volume, density.				
		2. Explain when length, mass, weight, density, area, volume, or temperature are appropriate to describe properties of objects or substances.				
	Explain world composition.	3. Classify substances as elements, compounds, or mixtures to justify classification in terms of atoms and molecules.				
		4. Describe the arrangement and motion of molecules in solids, liquids, and gases.				
	Identify/describe.	(Benchmarks about energy are in other strands at the middle school level).				
Explain electricity and magnetism.		5. Construct simple circuits and explain how they work in terms of flow of current.				
		6. Investigate electrical devices and explain how they work using instructions and precautions.				
2. <i>Changes in Matter</i> Investigate, describe, analyze changes.		1. Describe common physical changes in matter – evaporation condensation, sublimation, thermal expansion, and contraction.				
		2. Describe common chemical changes in terms of properties of reactants and products.				
	Explain changes related to atoms.	3. Explain physical changes in terms of the arrangement and motion of atoms and molecules.				
Explain energy, technological changes		4. Describe common energy transformations in everyday situations.				
3. <i>Motion of objects</i> Describe and explain motion- and control		1. Quantitatively describe and compare motions in two dimensions.				
		2. Relate motion of objects to unbalanced forces in two dimensions.				
		3. Describe non-contact forces exerted by magnets, electrically charged objects, and gravity.				
		4. Use electric currents to create magnetic fields, and explain applications of this principle.				
		5. Design strategies for moving objects by application of forces, including the use of simple machines.				
	Relate motion to energy conversion.	6. (none)				
3. <i>Waves and Vibrations</i> Describe sounds and sound waves.		1. Explain how sound travels through different media.				
		2. Explain how echoes occur and how they are used.				
	Explain shadows, color, and light.	3. Explain how light is required to see objects.				
		4. Describe ways in which light interacts with matter.				
	Measure/describe vibrations/waves.	5. Describe the motion of vibrating objects.				
Explain how waves -vibration transfer energy.		6. Explain how mechanical waves transfer energy.				

Checklist for Science Curriculum for 6-8

V. Using scientific knowledge in Earth Science	1. <i>Geosphere</i> Describe the Earth's surface.	1. Describe and identify surface features using maps.				
	Describe/explain changes in earth's features over time.	2. Explain how rocks are formed.				
		3. Explain how rocks are broken down, how soil is formed, and how surface features change.				
		4. Explain how rocks and fossils are used to understand the age and geological history of the Earth.				
	Analyze effects of technology on Earth's surface and resources.	5. Explain how technology changes the surface of the Earth.				
	2. <i>Hydrosphere</i> Describe water's characteristics and where water is found.	1. Use maps of the Earth to locate water in its various forms and describe conditions under which they exist.				
	Describe how water moves.	2. Describe how surface water in Michigan reaches oceans and returns.				
	Analyze the interaction of human activities with the hydrosphere.	3. Explain how water exists below the Earth's surface and how it is replenished.				
		4. Describe the origins of pollution in the hydrosphere.				
	3. <i>Atmosphere and Weather</i> Investigate weather-composition, changes in seasons over time.	1. Explain patterns of changing weather and how they are measured.				
		2. Describe composition and characteristics of the atmosphere.				
	Explain causes of weather.	3. Explain the behavior of water in the atmosphere.				
	Analyze relationships between human activities and atmosphere.	4. Describe health effects of polluted air.				
	4. <i>Solar System, Galaxy, Universe</i> Compare our planet and sun to other planets and star systems.	1. Compare Earth to other planets and moons in terms of supporting life.				
	Describe/explain how objects in the solar system move.	2. Describe, compare, and explain the motions of solar system objects.				
		3. Describe and explain common observations of the night skies.				
Explain scientific theories of origin of solar system.	4 (none)					
Explain how we learn about the Universe.	5. (none)					

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