

DOMAIN 4: GENERAL KNOWLEDGE**SUB-DOMAIN: SCIENCE****SCIENTIFIC INQUIRY—THINKING, ASKING, ACTING, AND SOLVING PROBLEMS**

GOAL 43: CHILDREN ENGAGE IN EXPLORING AND MAKING SENSE OF THE NATURAL WORLD BY ASKING QUESTIONS AND MAKING PREDICTIONS ABOUT CAUSE AND EFFECT RELATIONS THAT CAN LEAD TO GENERALIZATIONS.

Age Range	Developmental Growth	Child Indicators	Caregiver Strategies
<p>16 to 38 Months</p>	<p>Varies actions to see what happens as a result (cause and effect).</p>	<ul style="list-style-type: none"> ▪ Uses senses and trial and error to solve problems. ▪ Repeats to see if results are the same. May look to caregiver for reaction or explanation. ▪ Intentionally uses a series of actions, an object, or a caregiver to reach a goal or outcome. ▪ Imitates and begins to vary a caregiver's action(s) to solve a problem. ▪ Uses trial and error to find possible solutions to a problem (moving a puzzle piece around to find the right place). ▪ Creates and uses simple tools to solve problems or test a reaction (e.g. sticks, shovel, bucket, or hammer). ▪ Initiates action/reaction scenarios (e.g. throwing rocks in a pond, stomping in a puddle). 	<ul style="list-style-type: none"> ▪ Create an environment that inspires child to have ideas and figure out how to do something (e.g. provide open-ended materials, combinations of materials, and easy access to a variety of props and materials). ▪ Provide toys and surfaces where children push, pull, and transport objects. ▪ Encourage child to try out ideas, make mistakes, and develop contradictions. Talk about what happens. ▪ Encourage child to explore, compare, and describe safe natural materials (leaves, shells, snow, and food items) according to observable similarities and differences. ▪ Actively promote development of scientific reasoning by providing safe environments and responsive materials to explore, such as play dough, mud, sand, and water. ▪ Plan outdoor environments and experiences that stimulate experimentation and questions. ▪ Promote development of reasoning and problem-solving skills by making available problem-solving opportunities to observe, experience, and explore using a variety of materials that further encourage experimentation with possible solutions. ▪ Provide toys and materials that can be used in different ways to encourage intentional problem solving and exploration.

			<ul style="list-style-type: none"> ▪ Provide safe cooking experiences (e.g. stirring ingredients in a bowl, cutting a slice of cheese with a plastic or safe knife “cut some bites of cheese—how big is a bite?”). ▪ Add simple experiments to activities (e.g. during food preparation, ask: “What happens when you squeeze the empty egg shell in your hand?”). ▪ Refrain from intervening too quickly as child explores problem-solving experiences, and discuss and experiment with solutions and the results of their experiments. ▪ Wait for child to gesture, motion, or verbalize a request for help or assistance. ▪ Acknowledge, encourage, and support explorations and attempts at problem-solving and new learning. ▪ Emphasize freedom to explore learning and problem-solving opportunities rather than providing or emphasizing predetermined solutions or outcomes. ▪ Ask questions such as “What do you think the ball will do when you drop it?”
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