All About Young Children
Information for Families on Children's Early Development

48 months *to* 60 months

APPROACHES TO LEARNING

What skills help children learn?

Introduction

What skills do preschool-aged children use to solve problems?

- One skill that preschool children use to solve everyday problems is math reasoning.
- Math concepts like number, counting, shape and size all help children with solving problems. Children use these skills to choose what size plate they will need for their quesadilla, to figure out how many cars they need so each of their friends can have one and to search for a blanket big enough to cover two babies.
- A young preschool child may begin by trying an idea that doesn't work. An older preschool child may try several strategies, finally finding one that works. Whether their ideas work at first doesn't matter as much as the fact that they are practicing using these ideas, testing them out and changing their course of action when necessary. These strategies are useful in everyday problem-solving, as well as in developing other math skills.
- Children also use observation and investigation skills to solve problems.
- Children use all their senses to gather information, and to construct meaning and knowledge.
- They are naturally curious observers and notice small things that many adults miss, like the ants coming out of the crack in the sidewalk.
- Children may also use tools provided to them for measuring or observing, with the guidance of adults. For example, when observing a leaf, they may use a magnifying glass to see the "lines" more clearly or use a ruler (or unit blocks) to measure its length. Through observation, children begin to

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recognize and describe similarities and differences between one object and another.

- Children use their developing skill at careful observation to compare and contrast objects and events and classify them based on different attributes. For example, a child might separate all the “pointy” leaves from all the round leaves or separate the big leaves from the small ones.
- Children may also investigate objects and events by trying things to see what happens. For instance, they may investigate what happens to the toy car when it rolls down ramps with bumpy or smooth surfaces, test what happens to plants placed in locations with or without light, or test out their ideas of how to use pipes to make water go up and down in the water table.
- They learn to make predictions about changes in materials and objects based on their knowledge and experience, and to test their predictions through observations or simple experiments.
- Children use their skills of observation and investigation to ask questions, observe and describe observations, use scientific tools, compare and contrast, predict, and make inferences.

Children use expanded mathematical thinking to solve problems every day.

For example:

- A child, after setting the table for dinner, might notice that there aren’t enough chairs for everyone and bring an extra stool over.
- A child might use one object to measure another. For example, she might lay books end-to-end to measure how long her bed is.
- A child might predict how many grapes are in a bunch and then suggest that he and you count them to find out.
- A child might be building a road with long blocks and, when she can’t find any more long blocks, might use two smaller blocks to “fill in” for the longer block.

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- A child, when cutting paper money for his friends to use at his "grocery store," might announce, "I need to cut two more dollars for Ziya and Dylan."
- A child might sort her animals into two groups, big animals and small animals, and then get big leaves for the big ones to eat and small leaves for the smaller ones to eat.

Children demonstrate curiosity and an increased ability to ask questions about objects and events in their environment.

- A child, when playing with cars, might use a board to create a sloped ramp and roll different toy cars down the ramp. She might check which car goes the farthest when rolling down the ramp.
- A child, while digging in the mud, might see a worm and wonder, "Does it live in the ground? I see another one. Is it their home?"
- A child, while outside, might look up and ask a parent, "How come I can see the moon in the daytime?"
- A child, while sorting different rocks, might pick up one of the rocks and wash it with soap and water. Then he might get the magnifying glass to observe it more closely.

Children observe objects and events in the environment and describe them in greater detail.

- A child might observe a sweet potato growing in a jar and identify the buds and roots, and might also communicate, "There are white roots going down and small leaves." The child might take a photograph of the sweet potato, with the teacher's assistance, to document the potato's growth.
- A child, after a walk on a rainy day, might describe what the raindrops look like and how they feel, sound, smell, and taste.
- A child with visual impairments might manipulate seashells on the sand table and describe what she touches: "It's bumpy and round," or "It's smooth and flat."

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- A child, observing a snail closely, might describe it: “It is hard like a rock. Its body looks very soft. It moves very, very slowly. It has two long pointy things [antennas] sticking out.”
- A child might observe a caterpillar (or a picture of a caterpillar) closely and draw a picture of the caterpillar in his journal. He might then communicate, “It has stripes—yellow, white, and black—like a pattern.”

Children can identify and use a greater variety of observation and measuring tools, such as measuring tapes and scales.

- A child might ask for a magnifying glass to observe a worm more closely and communicate, “I need the magnifying glass to look very close.”
- A child, fascinated with the growth of her green beans, might get a ruler and say to her parent, “I want to see how big it is.”
- A child, while preparing dough, might use a measuring cup to pour one cup of flour.
- A child, while building, might stack blocks to his height and count the blocks to measure his height.

Children compare objects and events and describe similarities and differences in greater detail.

- A child might observe that the plants she has been watering are “bigger, and the leaves are green, but the one that didn’t get watered has yellow leaves and looks dead.”
- A child might explore different kinds of squash by using sight and touch and describe their similarities and differences: “These are more round, but this is long. This squash is yellow and green and is very smooth, but that one feels bumpy.”

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- A child might compare objects that can roll down a ramp (such as balls, marbles, wheeled toys, or cans) with objects that cannot roll down (such as a shovel, block, or book). For example, he might refer to objects that can roll down and communicate, “These are round and have wheels.”
- A child might compare a butterfly with a caterpillar (while observing pictures or actual objects); for example, she might communicate that the butterfly can fly and the caterpillar cannot and that the butterfly has a different shape and different colors.
- A child might observe and describe what the sky looks like on a foggy day and how it is different on a sunny day.
- A child, when working in the garden, might use a real shovel and describe how it is similar to or different from the toy shovel in the sandbox area.

Children might demonstrate an increased ability to make predictions and check them.

- A child, after planting sunflower seeds, might communicate, “The seeds will grow, and there will be sunflowers.” Then, he might observe the plant daily for changes.
- A child, in response to the question, “What do you think will happen if water is added to the flour?” might predict, “The flour will feel sticky and will not look like flour anymore. The water and the flour will mix together.”
- A child might cut open a tomato, observe what it looks like inside, and comment, “I thought there would be no seeds inside the tomato, but now I see tiny seeds inside.”
- A child might bring an object to the bathtub and predict whether it will sink or float. Then she might put the object in water and observe what happens. Then she might comment to her parent, “Yes, I knew it! It is floating.”

Children have increased ability to use observations to draw conclusions.

- A child might observe many different fruits and vegetables and communicate that fruits have seeds and vegetables do not.

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- A child, after observing the toy cars going down the ramp, might conclude that they go down fastest when the ramp is steep.
- A child might observe a picture of an unfamiliar animal. Then she might notice the wings and communicate, “It is a bird. I know it, because it has wings.”
- A child might observe a picture of a child dressed in a jacket, a scarf, mittens, and a hat and communicate that it must have been very cold outside.

Tips for families in helping children to practice mathematical thinking, to be observant, and to engage in investigation:

- Offer open-ended materials for children to play with, including blocks, cars, shells, stones, toy animals, and small and large cardboard boxes. Open-ended materials offer children a chance to create their own play, to use their imaginations and to become self-motivated learners.

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- Involve children in household tasks like cooking, setting the table, sorting laundry, and gardening. Ask children to solve problems. Children love to solve "real" problems. It challenges their thinking skills and offers them the opportunity to feel like a contributing member of the family.

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- “We are having company tonight: Grandma, Poppy, and Uncle Stu. How many plates, forks, glasses and napkins do we need on the table so that there is a place for each of us?”
    - “Would you help me put all the light-colored clothes in this basket and the dark ones in this basket?”
    - “We need two apples, four kiwis and one orange for our fruit salad. How many pieces of fruit altogether do we have?”

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  - "We have eight tomato plants, and we will put them in two rows. How can we set them out on the ground so there is the same number of plants in each row?"
- Suggest simple measuring tasks for your child, for example: "If we line up these little rocks, how many do you think it will take to get to the sidewalk?"
- Offer measuring tools such as rulers, small scales and measuring cups to children and work with them to learn how to use them.
  - "We need two cups of flour. Here is the cup measurer. Would you help me by filling it up 2 times and putting the flour in this bowl?"
  - "Uncle Stu is very tall. Shall we use this measuring tape to see how tall he is?"
  - "Which one do you think is heavier, this one rock or these 5 leaves? Let's put them on the balance scale to see."
- When you are grocery shopping, ask for your child's help.
  - "Would you get 6 bananas?"
  - "How many potatoes do you think will fit in this bag? Shall we count them?"
  - "We are going to have peaches for dessert tonight, and you can have one to eat on the way home. How many peaches will we need so everyone in the family can have one tonight, and you can also have another one now?"
- When you are outside or at the park, stop to look carefully at what is around you. Observe what your child is interested in and ask questions to encourage observation and reasoning.
  - "Oh, you found a leaf. Where is another one that is the same as this one? Are there any leaves that are different?"
  - "See all the earthworms? We didn't see them yesterday. Why do you think they came out today?"
  - "Where do you think that snail came from?"
  - "You are taking the petals off the flower. How many petals are there?"

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