



# 36 months *to* 48 months

## APPROACHES TO LEARNING

*What skills help children learn?*

### Introduction

*What skills do preschool-aged 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



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 mathematical thinking to solve problems every day.

- Children rearrange blocks to build a balanced, tall tower, for example, by placing the rectangular blocks at the bottom and triangular blocks at the top.
- A child might go to get one more horse, so that each of her corrals has a horse in it.
- A child might give his friend two flowers and keep two for himself, so they both have the same number of flowers.
- A child might compare the length of her play-dough snake with her friends to see which is the longest.
- A child might create groups of things according to whether they can roll or not.



- A child might pour sand from a big bucket into a smaller container and realize that the sand won't fit, and then might go to get another, bigger bucket.

Children demonstrate curiosity and ask simple questions about objects and events in their environment.

- A child might build a tower higher and higher to see how high it can get before it falls.
- A child might look at a snail and ask why it is hiding in its shell.
- A child, when the car gets stuck on the ramp, might turn a car upside down and notice that a wheel is broken.

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

- A child might observe the inside and outside of a pumpkin and describe how it looks, smells, and feels, using her senses of sight, smell and touch.
- A child might observe a ball rolling down the slide and communicate, "Look how fast it is rolling. Let me try it again."
- A child might taste a piece of orange and a piece of lemon and call the orange sweet and the lemon sour.
- A child with a visual impairment might touch the bark of a tree and communicate, "It feels a little scratchy when I touch the bark."
- A child, after dropping different balls onto the floor, might listen to and compare the different sounds they make and indicate which ball makes a loud sound and which ball makes a soft sound.
- A child, while on a walk around the neighborhood, might squat down to smell some blooming flowers and exclaim, "It smells so good!"

Children begin to identify and use, with adult support, some observation and measuring tools.

- A child, while exploring leaves, might use a magnifying glass, with a parent's assistance, to observe a leaf closely.



- A child, while digging in the garden, might use a shovel to move soil in the yard.
- A child might hold a measuring tape up to the table and say, "I'm measuring the table. It is 6 long."
- A child, using a measuring cup, might help a family member measure two cups of flour during a cooking activity.
- A child, while observing ants with a magnifier, might say, "Look how big the seed is. It is bigger than the ant."

Children compare objects and events and begin to describe similarities and differences.

- A child might observe rocks and sort them by size, indicating which are big and which are small.
- A child might observe the inside and outside of a watermelon and describe the difference: "The outside is green and hard, and the inside is red and soft."
- A child might see images in a picture book and describe what she sees: "Frogs are green, and toads are brown."
- A child might demonstrate how a truck is very slow and a yellow car is very fast.
- A child with a speech delay might dip his fingers in cups of water and indicate which cup has colder water.

Children make predictions and check them, with adult support, through real experiences.

- A child might explore an apple and make a prediction: "Maybe it has six seeds inside." After a parent cuts it open, he might count the seeds.
- A child might look through the window on a windy day and predict, "More leaves will fall down."
- A child might make a prediction about how far the toy car will travel down the ramp, by indicating the distance with a gesture. Then he might push the car down to test his prediction.



***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, small and large cardboard boxes. Open-ended materials encourage children to use their creativity, imagination and problem-solving skills.

*Open-ended materials offer children a chance to create their own play, to use their imaginations and to become self-motivated learners.*

- Involve children in household tasks like cooking, setting the table, and sorting laundry. Ask children to solve problems, for example:

*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.*

- “For how many people do we need to set the table with plates, forks and napkins?”
- “Can you help me put all the light-colored clothes in this basket and the dark ones in this basket?”
- “We have two apples, two bananas and two oranges for our fruit salad. How many pieces of fruit altogether do we have?”
- Suggest simple measuring tasks for your child. For example: “If we line up the cars, how many do you think we can fit on the edge of this table?”
- When you are grocery shopping, ask for your child’s help.
  - “Would you get 3 bananas?”
  - “How many potatoes do you think will fit in this bag? Shall we count them?”
  - “We have 5 people in our family. Would you get an apple for each person?”
  - “We need 2 pounds of peaches. Watch the scale to see when the needle points to 2.”
- 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. When we support children’s



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exploration of their interests, we can help deepen their investigation and understanding of the world around them.

- “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?”

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