



## MATHEMATICS

In pre-kindergarten, your child is starting to learn the fundamentals of mathematics. Your child needs a strong foundation in spatial relationships, classification, patterning, one-to-one correspondence, and order and numeration before he can learn to add and subtract. Math skills are abstract and are best learned through a variety of hands-on activities including cooking, puzzles, shapes, sand/water play, measuring, beading, and the like. Playing with your child daily will give him the start he needs to be a strong mathematician. Activities in these areas will include:

- Reciting numbers 1 to 30 in the correct order.
- Recognizing and naming numerals 0-10.
- Matching quantities and numerals 0-5.
- Counting concrete objects and actions up to 10 using one-to-one correspondence.
- Using comparative language (e.g., more than, less than, and equal to).
- Experimenting with adding and subtracting.
- Modeling real-world addition and subtraction problems.



**With prompting and support, your child can recite numbers 1 to 30 in the correct order.**

- Recite numbers up to 30 in the correct order while doing routine tasks (e.g., washing hands, setting the table).
- Recite the numbers 1 to 30 in the correct order while doing exercises outside.

**HELP AT HOME**

- ▶ Sing counting songs and rhymes.
- ▶ Read books with numbers, like *Chicka Chicka, 123*.
- ▶ Lead your child in counting to 30 during daily routines, such as getting in the car, playing hide and seek, picking up toys, brushing teeth, and washing hands.

**With prompting and support, your child can recognize, name, and attempt writing numbers 0 – 10.**

- Identify numbers in the home (e.g., on the cash register, phone, on the calendar, clock, measuring cups).
- Identify numbers in a counting book.
- Attempt to write numbers 1–10.

**HELP AT HOME**

- ▶ Go on a number hunt in your home, identifying numbers in various locations.
- ▶ Review numbers daily, incorporating the calendar into this review.
- ▶ Read a counting book and demonstrate how to write the numbers (e.g., draw numbers in the air, in sand or paint).
- ▶ Provide materials, such as number stencils, number cards, paper, crayons, and markers for your child to use to create numbers.
- ▶ Find and press numbers at home and in the community (e.g., microwave, cash register, phones, elevator, keyboards).

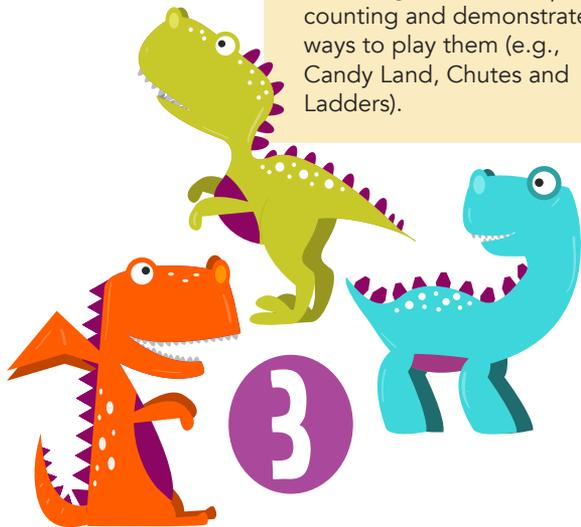


With guidance and support, your child can recognize that a numeral is a symbol that represents a number of objects, using developmentally appropriate pre-kindergarten materials.

- Match numbers with the correct number of items in each group (e.g., five counting bears with 5, three buttons with 3).
- Count four baby dolls and say, “I have four dolls.”
- Point to the calendar and say, “1, 2, 3, 4, there are 4 days before my birthday.”

## HELP AT HOME

- ▶ Label boxes with pictures and words for your child to sort toys. Write the number of toys that belong in each box.
- ▶ Use felt and cardboard to create a felt board. Then cut out numbers and objects and have your child sort the objects by the amount and place under or next to the number.
- ▶ Provide objects to count, and demonstrate matching numbers with groups of items.
- ▶ Provide games that require counting and demonstrate ways to play them (e.g., Candy Land, Chutes and Ladders).



## With prompting and support, your child can match the amount and numbers 0 – 5.

- Count motor action up to 10.
- Count any seven objects in a scattered design in the environment.
- Estimate the number of objects in a group (e.g., stating how many dots there are on the side of a dice or dominoes without counting individually).



### HELP AT HOME

- ▶ Arrange small numbers of small objects (e.g., small foods, beads, puzzle pieces, small blocks/balls) to identify small numbers of scattered designs.
- ▶ Roll dice on the table and let your child identify the number of dots on the die.
- ▶ Create several sets of cards with dots on each card. All cards in a set should have the same number of dots, except for one card that has a different number of dots (e.g., three cards that each have four dots, and one card that has five dots). Ask your child to identify the card that does not belong in the set.
- ▶ Create cards with a range of zero to ten dots for your child. Place cards in front of him. Call a number out and see how fast your child can find the card.
- ▶ Count the number of scoops needed when cooking (e.g., three scoops of rice for three people at dinner, two scoops of sugar for sweet tea).

**Your child can use the number name to represent the number of objects in a set, using developmentally appropriate pre-k materials.**

- Count rocks and say, “I have ten rocks.”
- Set the table for lunch for five and say, “One fork, two forks, three forks, four forks, five forks, I’m done!”
- Count body parts and say, “I have two eyes,” or “I have ten toes.”

### HELP AT HOME

- ▶ Play “Simon Says” with your child. Make statements such as, “Simon says, clap your hands three times.”
- ▶ After your child counts objects ask, “How many did you count?”

**Your child can use comparative language to compare objects, using developmentally appropriate pre-k materials.**

- Use comparative words (e.g., more, less, equal) verbally in a number of situations. “I have more long blocks than short blocks in the box.”
- Add a bear to the four bears in a stroller and say, “Now we have more bears in the stroller.”

### HELP AT HOME

- ▶ Use comparative words by asking, “Do you want more?” during mealtime.
- ▶ Use comparative words by asking, “Is the giraffe taller than the bear?”
- ▶ Use comparative words by asking your child if there are enough plates for everyone at dinner time.
- ▶ Count boys and girls in the family. Ask, “Which is more? Less?”



**With guidance and support, your child can experiment with adding and subtracting, while using developmentally appropriate pre-k materials.**

- Discuss how many objects are present when adding objects.
- Discuss how many objects are present when taking away objects (e.g., when playing store say, “This costs three dollars; you only gave me two.”)
- Act out subtraction rhymes, such as “5 Little Apples.”

### HELP AT HOME

- ▶ Count the number of objects in a set (0 - 9), add one more to the set, and ask, “How many objects are in the new set?”
- ▶ Count the number of objects in a set, take one away, and ask, “How many objects are in the new set?”
- ▶ Use small snacks (e.g., goldfish, pretzels, cereal) and ask, “How many are there after eating one?”



**With guidance and support, your child can model real-world addition and subtraction problems using numbers 0 – 5, while using developmentally appropriate pre-k materials.**

- Count how many toys are left to put in a box or on the shelf.
- Play with two balls and say, “I need one more ball to have three balls!”
- Count two cookies for himself and two cookies for a friend at snack time and state, “I have two cookies and you have two cookies. If we put them together we have four cookies.”

## HELP AT HOME

- ▶ Provide opportunities during the day for your child to distribute and collect materials.
- ▶ Provide opportunities to engage in activities to count and then change the number of units in a group by adding or subtracting.
- ▶ Provide activities that engage your child in discussing putting objects together and then taking them apart.
- ▶ Distribute food (e.g., grapes, pretzels, cereal) to yourself and your child in uneven amounts and have your child help you match the amount of food in each plate by adding and/or subtracting.



## With guidance and support, your child can duplicate and extend simple patterns using concrete objects.

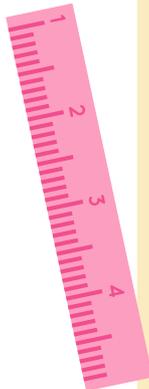
- Arrange objects in a pattern (e.g., blue, red, blue, red) based on one attribute (e.g., color, size, shape).
- Reproduce a repeating rhythmic pattern after a model, (e.g., stomp, clap, and snap).
- See the pattern in a string of beads and continue with the next bead needed to continue the pattern.

### HELP AT HOME

- ▶ Provide opportunities for creating patterns when lacing objects (e.g., cereal, beads).
- ▶ Provide and demonstrate music and movement experiences (e.g., “Head, Shoulders, Knees, and Toes”, “You’re Happy and You Know It”).
- ▶ Play patterning games with materials of various, sizes, colors, or shapes (e.g., memory, “finger plays,” felt pieces).

## With guidance and support, your child can recognize measurable attributes of everyday objects such as length, weight, and size, using appropriate vocabulary.

- Compare own height with the height of other children.
- Describe a block as heavy.
- Look at two block structures and say, “My building is taller.”



### HELP AT HOME

- ▶ Provide materials of different lengths for your child to measure and provide measurement tools (e.g., rulers, balance, yardsticks, measuring tape, bathroom scales).
- ▶ Provide a sensory table with types of materials that vary in weight and size and discuss the features of the objects by using appropriate characteristics, such as heavier/ lighter, and longer/shorter.
- ▶ Engage your child in measuring everyday objects.

**With guidance and support, your child can use nonstandard units of measurement.**

- Use construction paper inchworms to measure how long an object is.
- Use hands to hold objects and compare weights.
- Use your child’s feet to measure the length of an object, such as a table.

**HELP AT HOME**

- ▶ Provide opportunities and materials (e.g., use hands, feet, arms, drinking cup, feet) for measuring length, weight, and size throughout your home and outside.
- ▶ Provide activities for your child to use nonstandard items for measuring (e.g., hands, string, paper clips) and demonstrate appropriate usage.
- ▶ Graph and chart your child’s measurements.



**With guidance and support, your child can explore standard tools of measurement.**

- Stand on a scale and see the weight.
- Use rulers and yardsticks to “measure” structures and objects.
- Use measuring cups at the sensory table.

**HELP AT HOME**

- ▶ Provide opportunities and tools for measuring (e.g., rulers and yardsticks) throughout your home and demonstrate appropriate use of the tools.
- ▶ Demonstrate graphing and charting measurements.
- ▶ Plan cooking experiences and have your child use measuring cups.

## With guidance and support, your child can sort, categorize, or classify objects.

- Sort toy cars or other play objects by length.
- Categorize the plastic play animals by size.
- Classify blocks by weight.
- Place objects on a table or floor graph to sort, categorize, or classify.



### HELP AT HOME

- ▶ Provide a variety of materials of different sizes, weights, and colors and have your child sort, categorize, or classify objects.
- ▶ Create a graph using sorted, categorized information (e.g., the number of family and friends who like chocolate, vanilla, or strawberry ice cream).

## With guidance and support, your child can correctly name shapes.

- Verbally name shapes.
- Say, “I am sitting on a rectangle.”
- Name the shapes while putting together a shape puzzle.
- Hold up the proper shape when reaching the point in the shape song where the name of a shape is stated/sung.

### HELP AT HOME

- ▶ Provide shape puzzles and other geometric manipulatives, such as pattern blocks and geoboards. Comment on your child’s actions, supplying the shape word or asking your child the shape word, while your child is using the materials.
- ▶ Read books about shapes, like *Shapes, Shapes, Shapes* by Tana Hoban.
- ▶ Provide shape manipulatives, such as wooden pattern blocks, for your child to play with.
- ▶ Name the shapes of objects or signs around your home.



With guidance and support, your child can recognize and correctly name shapes in the environment, regardless of their orientation or overall size.

- Point to a shape in the environment when asked, "Can you find a square?"
- Name shapes of ordinary objects in the environment, such as: note that the door is a rectangle.

### HELP AT HOME

- ▶ Give your child play dough and shape cutters. Comment on the "shape cookies" you are making.
- ▶ Read books about shapes, such as Dr. Seuss' *The Shape of Me and Other Stuff*.
- ▶ Take your child on a shape hunt.
- ▶ Discuss the attributes of each shape (e.g., number of sides, number of corners, length of sides).
- ▶ Have your child pick a shape out of a feel bag and identify it without looking at it, but by feeling and talking about the number of sides (if it has sides), the length of the sides, and number of corners.

### RESOURCES

#### BASIC 2D SHAPES



circle



triangle



rectangle



pentagon



hexagon



octagon



rhombus



star



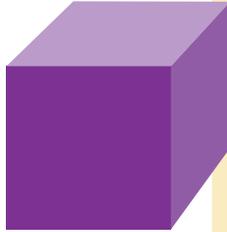
oval



square

**With guidance and support, your child can explore the differences between two-dimensional and three-dimensional shapes.**

- Sort two-dimensional and three-dimensional shapes into separate groups.
- Match similar two-dimensional and three-dimensional shapes.



### HELP AT HOME

- ▶ Provide wooden pattern blocks, paper, pencils, and crayons.
- ▶ Provide two-dimensional and three-dimensional shape manipulatives. Ask your child about similarities and differences he sees while using the manipulatives.
- ▶ Engage your child in activities using two-dimensional and three-dimensional manipulatives.
- ▶ Help your child identify the side of a cube and how many there are.

**With guidance and support, your child can create and represent shapes using developmentally appropriate pre-kindergarten materials (e.g., popsicle sticks, play dough, blocks, pipe cleaners, and pattern blocks).**

- Use play dough and shape cookie cutters to create shapes.
- Use pipe cleaners to create shapes.
- Draw and/or cut shapes using available materials.

### HELP AT HOME

- ▶ Provide modeling materials (play dough and clay) to make three-dimensional shapes.
- ▶ Provide a variety of art materials and have your child create shapes.
- ▶ Engage your child in activities to create shapes (e.g., drawing and cutting shapes) such as triangles, squares, or rectangles.

With guidance and support, your child can explore using shapes to create representation of common objects (e.g., use a square and a triangle to make a house).

- Use wooden pattern blocks to create common objects like cars, boats, or other objects.
- Use paper cut into various shapes to create a shape person or animal.
- Use unit blocks to create structures.
- Use rectangular blocks in the dramatic play area to represent objects (like a cell phone).

### HELP AT HOME

- ▶ Provide activities using a variety of shape materials (e.g., pipe cleaners, wood sticks) to create objects.
- ▶ Provide opportunities to engage in creating shapes using nontraditional materials (e.g., shoe boxes, paper towel tubes, and plastic containers).
- ▶ Create a book of everyday objects at home.



### RESOURCES

#### BASIC 3D SHAPES



prism



cube



cone



pyramid



cuboid



sphere



cylinder