Fired Up, Not Burned Out:
PreK Math Centers That Ignite Learning

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Preschoolers' brains undergo significant development and grow most as the result of complex activities—not from simple skill learning.

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Summary of 2022 Texas PreK4 Guidelines for Math

Google: Texas PreK Guidelines for the full document

- Number Sense
  - V.A.1 Rote counts from 1 to 30.
  - V.A.2 Counts up to 10 objects with one-to-one correspondence
  - V.A.3 Counts up to 10 items and demonstrates cardinality by communicating that the last number indicates how many items are in the set.
  - V.A.4 Instantly recognizes the quantity of up to 6 items without counting (subitizes)
  - V.A.5 Recognizes numerals 0 to 10
  - V.A.6 Represents quantities up to 10
  - V.A.7 Child begins to understand that numbers 0-10 can be composed and decomposed in various ways to represent a quantity.
  - V.A.8 Compares sets of objects up to 10 using comparative language (e.g., greater than/less than/equal to/same number as)
- Joining and Separating
  - V.B.1 Uses objects, pictures, or verbal word problems to represent adding up to 5 objects
  - V.B.2 Uses objects, pictures, or verbal word problems to represent subtracting from a set of 5
- Geometry and Spatial Sense
  - V.C.1 Names and describes common 2D shapes (rhombus, square, triangle, circle, rectangle) and names at least 1 solid 3D shape (sphere, cone, rectangular prism, triangular prism, cube, pyramid)
  - V.C.2 Creates shapes using materials and/or manipulatives
  - V.C.3 Uses position words (over, under, beside, between, etc.)
  - V.C.4 Recognizes common shapes regardless of orientation or size
- Measurement
  - V.D.1 Recognizes and compares heights or lengths of people or objects
  - V.D.2 Recognizes and compares capacity based on how much space exists within objects
  - V.D.3 Recognizes and compares weights of objects
  - V.D.4 Uses everyday language to describe passing of time within a day
- Classification and Patterns
  - V.E.1 Sorts objects that are the same/different into groups and uses language to describe how the groups are similar/different
  - V.E.2 Collects data and organizes it in a graphic representation
  - V.E.3 Recognizes, duplicates, extends, and creates patterns

Counting Centers

Birthday Candle Counting

Materials: birthday candle picks with digits 0-9, regular birthday candles, paper cupcake cups, playdough

Instruction: Children roll playdough into ball and place in cupcake cup. They poke a digit in the dough and the correct number of candles.

Counting Drops

Materials: water, food coloring, pipettes, clear plastic cup

Preparation: Make recipe cards with dots or digits. Put about a tablespoon of water in each clear plastic cup.

Instructions: Children count dots on the recipe card and use pipettes to put the correct number or drops in the cup.

Number Sculptures

Materials: floral foam or Styrofoam, miscellaneous craft items such as feathers, tees, craft sticks, straws, etc.

Instructions: Children create a sculpture to represent a quantity. For example, if they choose the number four, they would use four feathers, four bobby pins, and four straws to create their sculpture.

Flower Pot Counting
Materials: plastic flower pots with a small amount of florist foam in each pot, flower cutouts attached to craft sticks
Instructions: Number the pots from 1-10 (or higher if desired). Have children place the correct number of flowers in each pot.

Lose a Tooth Counting Game
Materials: picture of a mouth with a bunch of teeth (print one out from the internet or draw one), mini marshmallows, die
Instructions: Kids cover each tooth with a marshmallow then take turns rolling the die and removing the number of teeth shown on the die. They can eat the marshmallows or set them aside. Whoever loses all their teeth first is the winner!

Tips for Counting

- Count *everything*
- Use a variety of materials
- Incorporate counting into all centers
- Don't forget zero
- Ask good questions
    - "How many more do you need to have 5?"
    - "You started with 6 and ate 2. Without counting again, can you tell how many you have?"

Geometry Centers

Tabletop Composing Shapes
Materials: square sticky notes, rectangular address labels, circular stickers
Instructions: Children hunt for squares, rectangles, and circles and mark them with the correct sticker or sticky note.

Straw Triangles
Materials: straws, scissors, playdough
Instructions: Children cut straws to different lengths then connect them with balls of playdough to form different types of triangles. Grouping similar triangles is an extension.

Missing Dot Triangles
Materials: dot stickers, crayons, paper, ruler or straight edge (optional)
Instructions: On several sheets of paper, place two dots. The dots may be in the same position on each sheet of paper or you may vary the position. Have the child place a third dot, then connect the dots to form a triangle. Emphasize that a triangle has three sides (the lines) and three corners (the dots). Have the child repeat as many times as possible, place the third dot in a different position each time. Compare the triangles and discuss the similarities and differences between them.

Shark Teeth Triangles
Materials: gray construction paper (one per child), white construction paper folded into triangles (3 per child), scissors, glue
Instructions: Have children draw an oval on the gray construction paper to represent the shark's head. Ask them how they might use the white construction paper triangles to make shark teeth. They may do this by snipping the end points of each of the three triangles. Glue the small triangles to the oval. Draw eyes, etc. Ask them what they might do with the leftover white construction paper. Fins possibly?

Look, Make, Fix
Materials: pattern blocks
Instructions: Without showing the children, create a design using a few pattern blocks. LOOK: Show the design to children but ask them not to recreate the design yet. Cover the design again. MAKE: Children try to recreate the design. FIX: Show the design again and have them "fix" their design so that it is an exact copy.

Geometry Teaching Tips

- Use correct mathematical terms
- Have children compose (combine) and decompose (take apart) 2D and 3D shapes to create new shapes.
- Show shapes in various orientations.
- Build spatial relations by commenting on positional situations that occur daily. For example, "Tillie is climbing the steps to the slide. Quinn is next, and Zeb is at the end."

Measurement Centers

Tablecloth Measuring
Materials: plastic tablecloth, stickers, nonstandard units
Preparation: Place 4-5 "sets" of similar stickers in sections of the tablecloth. I like to use a "clump" of stickers so that when kids place the nonstandard units, the units can kind of extend into the clump. That way, kids don't have to be concerned about halves. Use a marker to draw lines to connect the sets of stickers. These lines help guide kids' placement of the nonstandard units. Without the lines, kids have a tendency to "wander" in their work.
Instructions: Children use nonstandard units like craft sticks, cotton balls, beans, drinking straws, paper clips, unifix cubes, toothpicks, or bobby pins to measure from one set of stickers to another.

If the Box Fits
Materials: collection of boxes and items that fit into the boxes
Instructions: Show a set of boxes or containers and a set of objects that fit into the boxes. Tell children that each object needs to fit into one and only one box. Have children select the container for each object. Remind them to watch out that they don't choose a big box for a small item, because the big box may be needed for a larger item.

Can Can
Materials: have each child bring an empty, clean food can from home such as orange juice, soup, or fruit or you may use boxes such as cereal, macaroni, rice, etc.
Instructions: Have children determine which cans (or boxes) will fit inside one another. Model and encourage the use of measurement vocabulary such as longer, shorter, too wide, too narrow, tall, short, etc.

Capacity Comparisons
Materials: empty cans and boxes, dry beans, scoop, container marked Target
Instructions: Children play a game guessing to discover which cans or boxes Hold More, Hold Less, and Hold the Same as the one marked Target. Have children devise a method for testing their capacity guesses.

Family Links
Materials: family photos, strips of paper, glue
Instructions: Children make paper chains, representing each family member with a different color: a red link for an adult, a blue link for a boy, a green link for a girl, and a yellow link for a pet. The children display the chains next to their family's picture. Children then compare the lengths of their chains. Chains can be combined into one large chain, representing the classroom family.

Measurement Teaching Tips

- Keep it activity oriented. Students should be actively doing, experimenting, and performing—not passively observing or filling in worksheets—ugh!
- Give students ownership and help them build number sense by offering choice about tools, units, and objects to measure. Plus, this gives you a chance to assess their number sense.
- Encourage reasonableness. Does the measurement make sense?
- Support estimation. Remember estimates can and should be revisited during measurement process.

Tips for Organizing and Using Math Centers

Select	Identical centers can be placed in several areas of the room.
Simplify	Some math centers can be permanent (like the computer or pan balance).
Review	Centers can be revisited throughout the school year.
Photograph	Take photos to document hard-to-keep activities
Engage	Make yourself one of the math centers.
Connect	Use math-themed picture books as a center
Strive	Plan on 40 minutes of math per day, mostly in centers.