# Thinking BIG Learning BIG

## What Is Thinking BIG?

- Connecting all parts of the curriculum to immerse children in a topic.
- Making small things BIGGER, child-sized.
- Making BIG things child-sized.
- Exploring children's interests, ideas and questions.
- Inviting children to observe, experiment, explore, create.

## Why Think BIG?

- Easier to see, touch, investigate and do.
- Expands sense of what's possible.
- Enhances learning new concepts.
- Empowers children.
- Boosts cooperation.
- Strengthens school-home communication.

## BIG Science

- Inquiry promotes an attitude of wonder.
- Science focus gives children time to observe and explore.
- Inquiry nurtures higher-level thinking.
- Action engages kids. Wind blows. Balls roll.
- Topics connect math, literacy, language, and the rest of curriculum.

## BIG Math

- Whole-body activities give a real feel for numbers.
- Gross motor games build math and physical skills.
- Children quantify observations.
- Graphing organizes information.
- Kids love BIG numbers: a hundred million thousand billion.

## BIG Literacy

- Recording comments shows power of words.
- Labeling increases print awareness.
- Learning poems and songs boosts pre-reading skills.
- Acting out stories fully involves children.

## BIG Language

- Increases vocabulary.
- Empowers speaking, reading and writing.
- Builds reading comprehension.
- Kids love BIG words like: Tyrannosaurus rex.

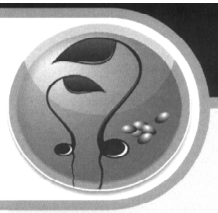
Activities meet national standards while children have fun.


**Thinking BIG means Learning BIG**

*Thinking BIG, Learning BIG: Connecting Science, Math, Literacy and Language in Early Childhood*, featuring activities from the Mountain View Parent Nursery School, is available from Gryphon House

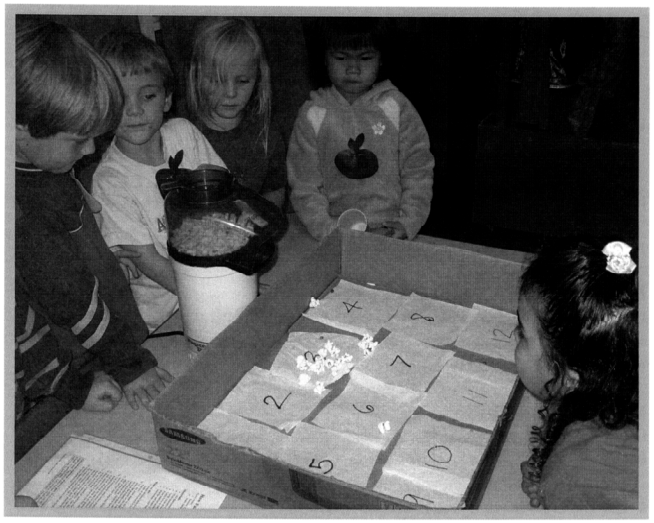
For further information e-mail Marie Faust Evitt: marie@thinkingBIGlearningBIG.com
visit: www.thinkingBIGlearningBIG.com and www.facebook.com/thinkingBIGlearningBIG

# How Far Will Popcorn Fly?



### TEACHER-TO-TEACHER TIP

Children love this activity because they get to eat the popcorn. Tell them ahead of time they will be able to eat some popcorn but they must wait until it is all popped so they can check their predictions; then you will gather the popcorn and pass it out. Make small batches so you can do multiple predictions. Also, it's easier for the children to count a smaller number of kernels. **Safety note:** The hot air popper will get hot! It's essential that children not touch the hot popcorn popper.



### FOCUS AREAS

**Science:** observing, planning and conducting a simple investigation
**Math:** counting, estimating, measuring—distance and time

### MATERIALS

Hot air popcorn popper
Plain popcorn seeds (not a microwave bag)
Large tray or clean shallow box
Large bowl to hold popped popcorn
Small paper cups to serve popcorn
Several paper napkins
Paper to record comments and predictions
Marker
1-minute sand timer

### PREPARATION

- Cover the bottom of a large tray or clean shallow box with paper napkins unfolded. Number the squares of the napkin to create a grid.

### WHAT TO DO

**Note**: Before this activity, have the children wash their hands because they will be eating the popcorn for a snack later.

1. Show a small group of children the popcorn kernels and ask if they know what the kernels are. Many children have never seen uncooked popcorn because they buy popcorn ready-made or microwave it in a bag. Invite the children to hold the kernels and squeeze them. Do they look and feel like popcorn? Ask, "What would these seeds be like to eat before they are popped?" Record the children's observations. Say, "These are not ready to eat yet."
2. Set a shallow box or tray on a table near an electrical outlet for the popper. Place the popper in front of the box and place the numbered napkin squares in the box to catch the popped corn. Ask the children on which numbers they think most popcorn kernels will land. Record their *predictions*, including each child's name, on a sheet of paper. (Most popcorn will land in front of the popper.)
3. Ask the children how long they think it will take for the popcorn to pop. Record their *predictions*.
4. Make half a batch or less of popcorn following the directions on the popper. Invite a child to start the sand timer. The children take turns flipping it and counting the flips until the popcorn finishes popping. While you are waiting, ask the children if they know what makes popcorn pop. (*Seeds* contain a little moisture. When heated, the water becomes steam, which puffs up the starchy interior. Eventually the outer *seed* coat bursts, sending the kernels flying.)
5. Record how long it takes for the first *seed* to pop and how long it takes for the rest of the batch to pop. Where do most kernels land? How many are on each square? Compare the results with the children's *predictions*.
6. Empty napkins of popped popcorn into the bowl to share. You can either serve it immediately or wait until lunch or snack time.
7. Make multiple small batches; ask for new *predictions* each time.

### DISCUSSION STARTERS

Use these questions to spark children's thinking during and after the activity:

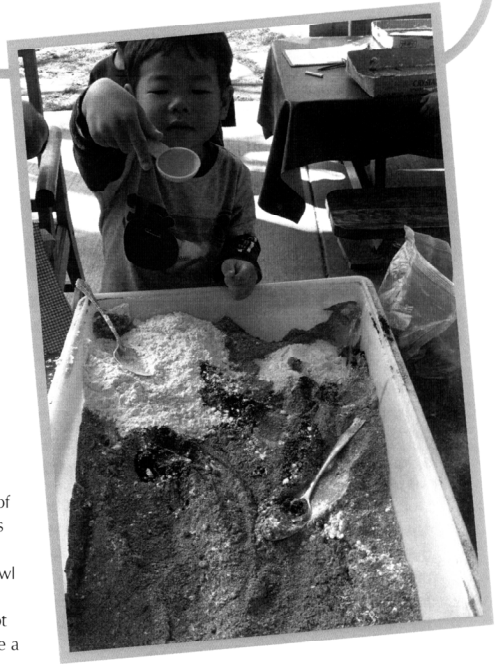
- How does this popcorn taste compared to popcorn you've eaten before?
- Did the popcorn land where you thought it would?

### SKILLS ASSESSMENT

Use these questions to determine a child's abilities and understanding:

- Can the child make a *prediction* about where most of the popcorn will land after seeing the initial trial?
- Can the child make a *prediction* about how long it will take for the popcorn to pop after seeing the first batch pop?
- Does the child change his *prediction* based on experience?

# Make Pretend Moon Dust



## FOCUS AREAS

**Science:** learning about the surface of the *moon*
**Math:** counting, measuring—volume, following a recipe
**Language Arts:** learning vocabulary
**Sensory:** feel of ingredients

## MATERIALS

Chart paper
Marker
Assortment of 1 cup and ½ cup measuring cups
Spoons
Sturdy bowl or tub
Sensory table or other large flat container
Small rocks and pebbles (optional)
Toy *astronauts* and space vehicles (optional)
Variety of gloves, such as dishwashing gloves, so the children can pretend they are astronauts feeling "*moon* dust" **Note:** The gloves are an optional astronaut prop. "*Moon* dust" is safe for the children to handle without gloves.
Magnifying lenses

## PREPARATION

- Ahead of time, ask a coffee shop to save used coffee grounds for you, the more the better. Dry out the grounds by spreading them out on cookie sheets in the sun or a 250° oven.
- Write the recipe on chart paper. Add illustrations of the ingredients or steps (optional).

## WHAT TO DO

1. Invite a small group of children to take turns measuring the ingredients into a bowl or plastic tub. The measurements do not have to be exact. Use a variety of sizes of measuring cups to compare amounts: "How many of these smaller ½-cup measures will it take to fill this BIG 1-cup measure?"
2. The children take turns stirring with spoons and mixing with their hands. When mixed, add the "*moon* dust" to the sensory table.
3. Make as many batches as you need for your sensory table. Consider making additional batches for the following *crater experiment*. The mixture looks remarkably like the gray dust of the *moon*. The mixture compacts well and makes a nice squeaking sound when squeezed. The children enjoy adding "*moon* rocks" and *astronauts*.
4. Encourage the children to use magnifying lenses to examine the *moon* dust and *moon* rocks.

**Moon Dust Recipe**
For each batch you will need:

- 4 cups dried coffee grounds (Used grounds are free from some coffee shops)
- 4 cups cornstarch
- 2 cups sand

Measure ingredients and stir with spoons and hands.

## DISCUSSION STARTERS

Use these questions to spark children's thinking during and after the activity:

- How does the "dust" feel?
- How does the "dust" sound when you squeeze it?
- What do you think it would feel like to walk in dust like this on the *moon*?

## SKILLS ASSESSMENT

Use these questions to determine a child's abilities and understanding:

- Does the child note the difference between different size measuring cups?
- Does the child use the measurement vocabulary of *more than*, *less than*, *larger*, and *smaller*?
- Does the child use the sensory vocabulary of *soft*, *smooth*, or *powder*?

# Crater Experiment: How Do Craters Form?

## FOCUS AREAS

**Science:** planning and conducting a simple investigation; using simple equipment and tools to gather data; learning about the position and motion of objects

**Math:** measuring—size, estimating

**Language Arts:** learning vocabulary

## MATERIALS

Books with photo illustrations of the *moon* surface, (see Good Books for Facts and Fun on pages 222–224) or downloaded images from the Internet

Prepared "*moon* dust" from the sensory table

Assortment of marbles, golf balls, small stones, baseballs, and other balls

Metal baking pans or plastic tubs, the larger the better

Tongue depressors, craft sticks, or combs to smooth the "moon dust" surface

Standard and nonstandard tools to measure, such as rulers and Unifix cubes

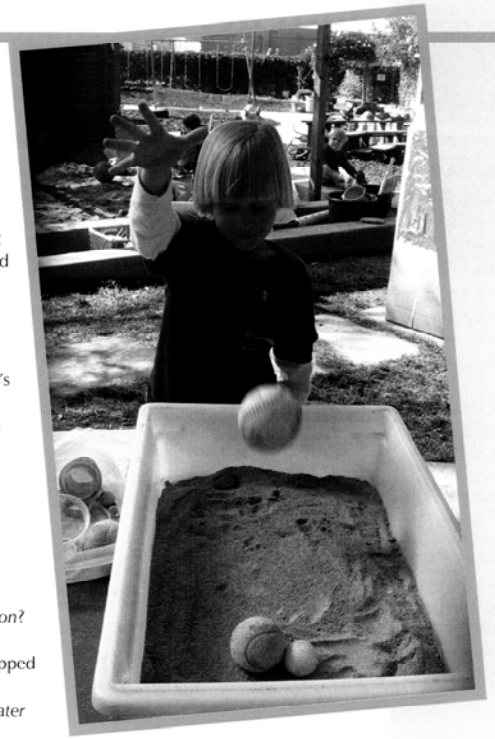
Assortment of round plastic or metal lids in different sizes, such as lids from milk jugs and yogurt and deli containers, washed thoroughly

## TEACHER-TO-TEACHER TIPS

- It's possible to do the *crater experiment* in the sensory table but children may approach the activity more scientifically if they work in metal baking pans or shallow plastic tubs.
- Children often hesitate to make *predictions* because they don't want to be wrong. You can encourage *predictions* by making one yourself that is not likely to happen, such as saying, "I think this tiny marble will make a huge *crater*, much bigger than the one the golf ball made. Let's see if that's what happens."

## WHAT TO DO

1. Show a small group of children photos of the *moon's* surface.
2. Introduce the word *crater*. A *crater* is a bowl-shaped hole created when a chunk of rock from space crashes into a *moon* or planet. *Craters* can be as tiny as the size of your fingernail or as BIG as huge cities. Say and clap out the syllables, **cra**-ter. Say *crater* as you act it out with your whole body, standing up, then crouching down, and standing back up while moving your outstretched arm in a giant arc from shoulder height down to the floor and back up. (**Note**: This is not an ASL sign.)
3. Tell the children they are going to do an *experiment* to explore how *craters* are formed on the *moon*. Remind the children that an *experiment* is a test to see what will happen. When scientists do an *experiment*, they predict what they think will happen. This is called a *prediction*. (See pages 40–41 for signs for *experiment* and *prediction*). Say, "When we do the *experiments*, you can make *predictions* about what will happen when we make *craters* like the ones on the *moon*."
4. The children choose a marble, pebble, or ball. Ask, "What do you think will happen when you drop it in the *moon* dust? Will the dust fly out? What's your *prediction*? Try it."
5. How wide across is the *crater* that formed? The children measure the *crater* with a ruler or Unifix cubes. Invite them to compare the *crater* with an assortment of round plastic lids. Is the *crater* bigger than the milk cap? Smaller than the jar lid?
6. The children then smooth out the dust with a tongue depressor or craft stick and choose a different size "space rock." Ask the children to *predict* whether that object will make the same size *crater* or a larger or smaller *crater*. Then they drop their object. What happens? (For younger children, have them drop two different items and compare the *craters* before smoothing out the dust.)
7. What happens if they drop the pebble from a much higher distance? What about a closer distance?
8. What happens if the children make a deep pile of dust and then drop a rock into the pile?



## MORE IDEAS

- Try dropping objects that are different shapes such as a key, a stick, and a crayon. What shape *craters* do they make?
- To be more scientific, use large cardboard blocks to keep the drop height consistent. The children rest their wrist on the top of a block and then drop the pebble. Stack two blocks for higher drops.

## DISCUSSION STARTERS

Use these questions to spark children's thinking during and after the activity:

- What would it be like to climb in a BIG *crater* on the *moon*?
- What would it feel like to walk in *moon* dust?

## SKILLS ASSESSMENT

Use these questions to determine a child's abilities and understanding:

- Is the child able to make a *prediction*?
- Does the child see a connection between the size of the object dropped and the size of the *crater*?
- Is the child able to compare the *crater* size with a lid?
- Does the child enjoy repeating the process of making *predictions* and testing them?