

POPCORN MATH

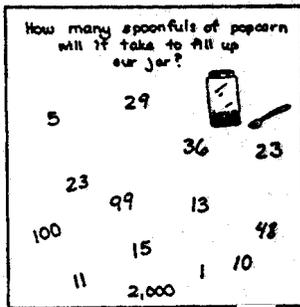
EXTENDED NUMBER PATTERNS

TALLYING POPCORN SPOONFULS

You will need ← a small bag of popcorn kernels
 jar/funnel spoon
 chart for estimates
 toothpicks or popsicle sticks
 individual chalkboards, chalk, and erasers



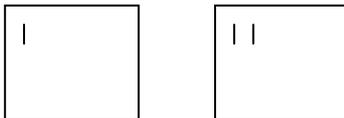
Hold up the jar and spoon to be used and ask the children to estimate how many level spoonfuls it will take to fill the jar to the top. Record their guesses on a chart.



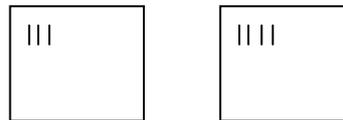
Have each child take a handful of toothpicks or popsicle sticks plus a chalkboard, chalk and eraser.

Begin filling the jar – children count aloud as each spoonful goes in:

“One.” Each child sets out a toothpick on chalkboard. “Two.” Another toothpick is set



out, “Three,” and another, “Four,” and another,



“Five.” This time the toothpick is set out but after all five are counted, “One, two, three, four, five,” the last toothpick is lifted and turned to the diagonal position to more easily see this group as five.



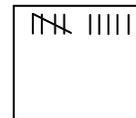
Teacher: *What number comes next?*

Children: *Six*

Teacher: *OK, here we go. (A spoonful is poured in.)*

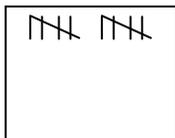
Children: *Six (A toothpick is set out.)*

Continue to 10. At ten, the toothpicks first look like this:



[Source: [Box It or Bag It Mathematics](#), The Math Learning Center 1-800-575-8130]

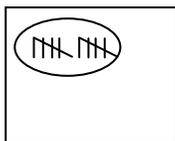
The last toothpick is again picked up and turned as before. Count toothpicks together now.



Children: One, two, three, four, five, six, seven, eight, nine, ten.

Teacher: Now I want you to use your chalk to loop your ten like mine. What number comes next?

Children: Eleven.



Proceed to 15, dumping spoonfuls of popcorn into the jar, counting and setting toothpicks. Again list the last toothpick and turn it to a diagonal position to more easily see the group of five.

Teacher: How many do we have so far?

Children: Fifteen.

Teacher: Let's count them to be sure. This time we'll count by ones.

Children: One, two, three, ..., fourteen, fifteen.

Teacher: Let's try it again, this time by fives.

Children: Five, ten, fifteen.

Teacher: Let's look at our chart. Have we passed any of our guesses yet?

Have children come up and cross out guesses that are less than 15.

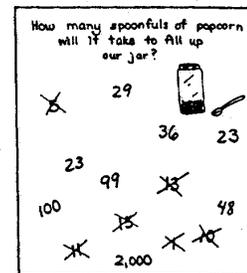
Teacher: Are there any other numbers we could get rid of right now?

Children: Fifteen!

Teacher: Why?

Children: Because you've put 15 spoonfuls in the jar and it's not full yet. It's got to be more than fifteen.

Teacher: OK. Come cross out the 15. Any other ideas?



Child: Two thousand!

Teacher: Why?

Child: It just can't be two thousand. The jar's half full, it would never hold two thousand spoonfuls.

Teacher: Class, do you agree?

Children: Yeah...

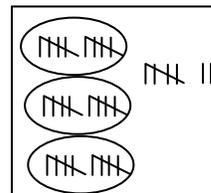
Eliminate a few more guesses and continue adding spoonfuls to the jar.

Teacher: What number comes next?

Children: Sixteen

Proceed to 20, where the toothpick is turned, the ten is looped and counting is again done by ones, fives, and even tens. Continue until the jar is filled.

Here is an example of counting together when the jar is full:



By ones: "One, two, three, ... (continue to), thirty-six, thirty-seven."

By fives: "Five, ten, fifteen, twenty, twenty-five, thirty, thirty-five, (everyone claps)—thirty-six, thirty-seven."

By tens: "Ten, twenty, thirty, (everyone stomps), thirty-five (everyone claps), --thirty-six, thirty-seven."

[Source: [Box It or Bag It Mathematics](#), The Math Learning Center 1-800-575-8130]

ESTIMATION AND PLACE VALUE COUNTING

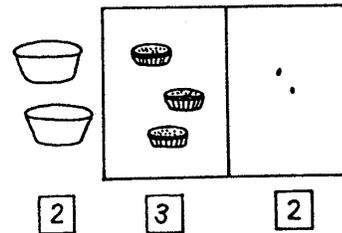
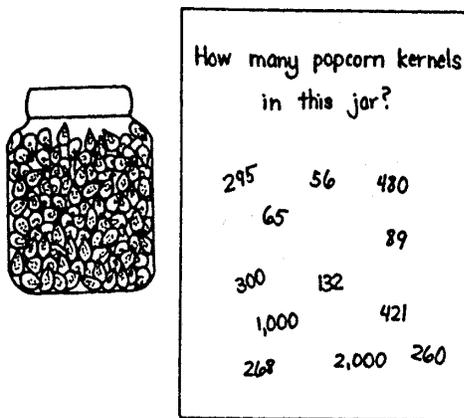
HOW MANY KERNELS?

You will need ← two or three tiny jars (make-up, pimento, etc.)
 popcorn kernels chart for estimates
 portion cups margarine tubs place value board
 several 3 x 5 index cards

Fill one of the jars with popcorn kernels and estimate how many kernels it took to fill the jar.

Once the counting is finished, count the entire sum: 100, 200, 210, 220, 230, 231, 232...

Record the guesses on a large sheet.



Label with numeral cards. Point out what each number really stands for. Mix the numbers up and have children rearrange. Invent another similar number and ask children to picture it and set it up with empty cups and tubs.

Have your children quickly help you count out the popcorn kernels into portion cups, ten kernels per cup, until no more tens can be made.

Teacher: *Let's read what we have in hundreds, tens and ones.*

Children: *Two hundreds, three tens and two ones.*

Set tens cups on the place value board; cups on the colored side, leftover kernels on the white side.

Teacher: *And how many kernels of popcorn do we have altogether?*

Children: *232!*

Begin counting the cups by tens. Each time you get to 100, dump the ten cups into a margarine tub and move the tub to the left of the place value board.

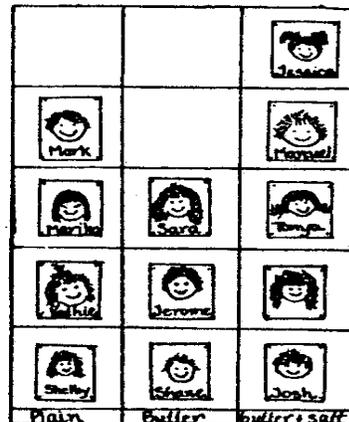
[Source: [Box It or Bag It Mathematics](#), The Math Learning Center 1-800-575-8130]

GRAPHING

PLAIN OR BUTTERED?

You will need ← paper graph
graphing markers prepared by
children or teacher

Make a picture graph to determine
how children in your class like
popcorn best.

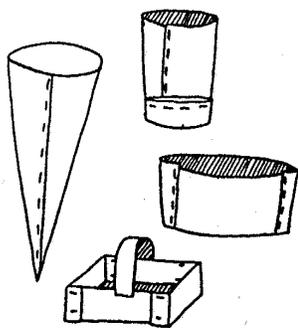


How do you like your popcorn?

GEOMETRIC PROBLEM SOLVING

POPCORN CONTAINERS

You will need ← one 8 ½ x 11 piece of paper per child
crayons tape, stapler, paste
enough popped popcorn (some left plain, some buttered, and
some with butter and salt) to give each child about a cup



Give each child a piece of 8 ½ x 11 paper. Tell
them they can come get the popcorn of their
choice, but they'll need a container to hold it.

They can use tape, staples, crayons, or glue, but
the single sheet of paper must become the
container. You'll see them create baskets, boats,
and envelopes. Older children may create cones.
This is a challenging problem. Encourage
children who are 'stuck' to ask others for help, or
to walk around the room to see if they can get an
idea from someone else. Let them come up to get
popcorn as soon as their container is completed.
When everyone has eaten, graph the containers
by type. (It's interesting to see how the children
decide to sort and name them.)

[Source: [Box It or Bag It Mathematics](#), The Math Learning Center 1-800-575-8130]

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MEASURING

THE CALIBRATED SCALE

You will need ← milk box scale (Materials Index)
 small plastic bags
 100 1” ceramic tiles
 record pad (staple several sheets of 5 x 18 newsprint to a
 6 x 19 sheet of poster board)
 various corn products

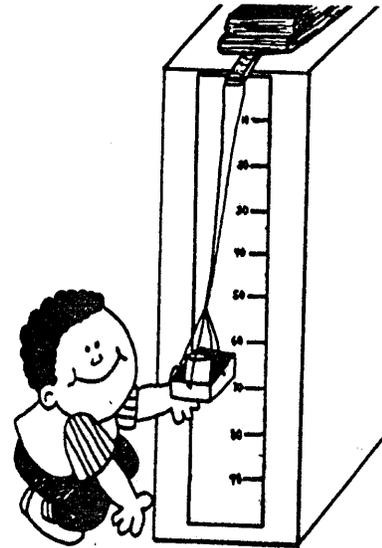
Bring in some additional corn products (a can of corn, an ear of Indian corn, cornstarch). Prepare a calibrated scale (see illustration).

Have children help count out ten piles with ten tiles each. Seal each set into a plastic baggie.

Suspend the milk carton scale from a ruler in front of a counter or at the end of a desk so it hangs over the record pad. Have a child make a line at the base of the milk carton scale.

Put a bag of tiles into the scale and mark as above. Continue in this manner until you have stretched the rubber band as far as it will safely go. Take all the tiles out.

Put a corn product in the scale. Mark the bottom of the scale again on the record sheet. Write down the product name: Corn—45 tiles. Continue until all the corn products have been weighed. Compare the weights. Arrange the products in order from the lightest to heaviest. Discuss.

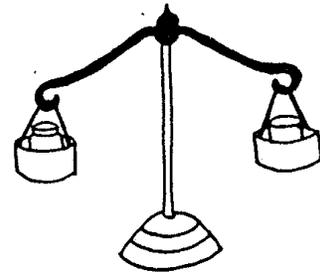


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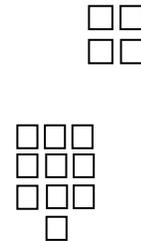
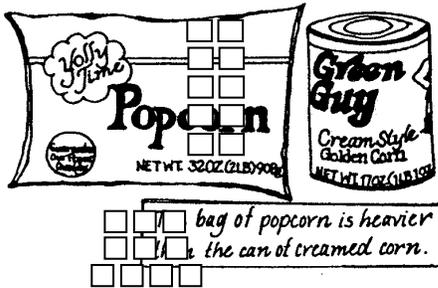
THE BALANCE SCALE

You will need ← balance scales corn products
 4 x 18 strips of construction paper
 1" ceramic tiles



Compare your corn products, item to item in your balance scale. Discuss language for comparing weights. (The cornstarch is lighter than the large can of corn.) Make record strips of these statements. Can the class use those record strips to order the items by weight?

Estimate how many tiles one of the products will weigh. Put an item in one pan of the scale and load tiles into the other pan. Once the scale is balanced, dump out the tiles and group into tens and ones to determine how many tiles the item weighed. Talk about how to write it down. Repeat with other items and have children practice writing in tens and ones.



HOMEWORK IDEAS

You will need ← teacher-prepared assignment sheet

1. Check your cupboards for corn products. Make a list of the corn products you have at home. Have an adult help you arrange them from least expensive to most expensive. a family member to check. Are there any other ways to lay out that same price with different combinations of coins?
2. Choose one of your items. Lay out the appropriate change to pay for that item. Ask
3. Find grocery ads for corn products in your paper. Cut them out and bring them to school.

[Source: [Box It or Bag It Mathematics](#), The Math Learning Center 1-800-575-8130]