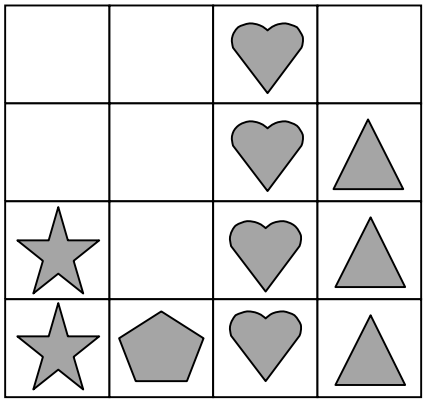
Name _____

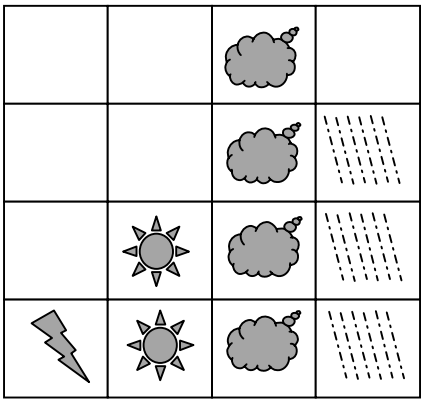
Kindergarten SDAP 1.1

Which shape has the most?



Grade 1 SDAP 1.2

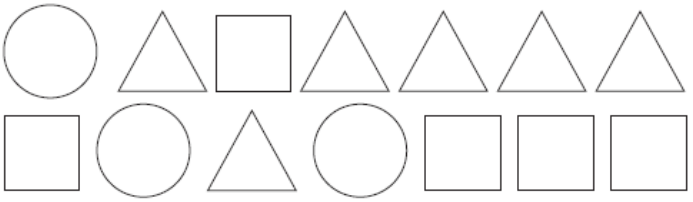
How many more cloudy days are there than sunny days?

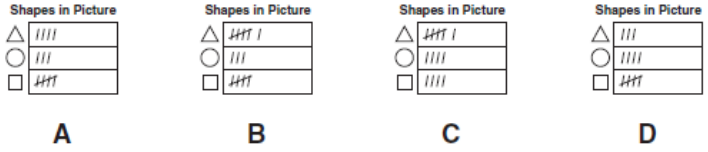


Draw a bar model to show your answer.

CST/Grade 2 SDAP 1.1

Which tally chart shows the correct number of each of the shapes in the picture?





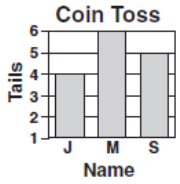
Which shape appears the most times? How many more triangles are there than circles?

CST/Grade 3 MG 2.2

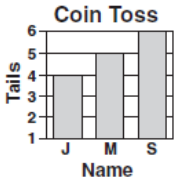
Josie, Mary, and Susana were tossing a coin to see how many times it would land on tails. They each tossed the coin 10 times and recorded their results with tally marks.

Coin Toss	
Name	Tails
Josie	𝍸
Mary	𝍸 |
Susana	𝍸

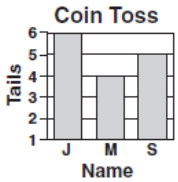
Which graph shows their results?

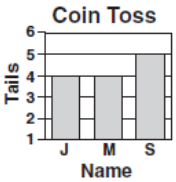


A



C





Graphing in the Primary Grades

Francis Abbatantuono

Objective: Teachers are given multiple strategies for developing student understanding of data collection and graphing.

Standards: Kindergarten: Statistics, Data Analysis, and Probability 1.1Pose information questions; collect data; and record the results using objects, pictures, and picture graphs.

1st Grade: Statistics, Data Analysis, and Probability 1.2 Represent and compare data (e.g., largest, smallest, most often, least often,) by using pictures, bar graphs, , tally charts, and picture graphs.

2nd Grade: Statistics, Data Analysis, and Probability 1.4 Ask and answer simple questions related to data representations.

Activities to develop understanding of statistics and data analysis

* Pizza graph
* Creating Bar Models
* Numberline
* Decomposition

Pizza graph

Objectives: Students will be able to build a pizza using concrete materials and graph the toppings.

Materials: Construction paper cut out to look like toppings: crust, cheese, pepperonis, olives, bell peppers, onions, mushrooms, pineapple
Glue or paste
Scissors
Graph template
Toppings pictures
Crayons: Black, yellow, red, green, brown,

Fewer and more handout
Pizza boxes (optional)

Vocabulary: More than | Less than/Fewer | Compare | Bar Model
Numberline | Decomposition

Teacher Note: The main point of this lesson is to take a fun graphing lesson and integrate important mathematical concepts (algebraic thinking, conservation of number, and one-to-one-correspondence) into the activity.

This lesson may take more than one day depending on your allotted times for math and the skill level of your students with scissors and glue. The connections at the end of the lesson can be integrated into the lesson or taught as separate lessons on another day.

The first part of the lesson is very focused on providing direct instruction and modeling for kindergarten students at the beginning of the year.

Introduction: Read the pizza poem and discuss what kind of pizza students eat at home. Access prior knowledge and build background knowledge for the lesson. Students are at the rug during this part of the lesson.

(Go over classroom norms for using manipulatives.)

Model: Teacher will have premade circles of cheese and crust. Teacher models how to cut out the cheese and crust circles.

Student: Students cut out cheese and crust circles.

Model: Teacher models how to fold cheese into fourths in preparation of cutting the cheese.

Student: Students fold then cut the cheese.

Model: Teacher models how to glue cheese to crust.

Student: Students glue the cheese to the crust.

Model: Teacher models how to choose the toppings for her/his pizza and demonstrates how to assemble a pizza.

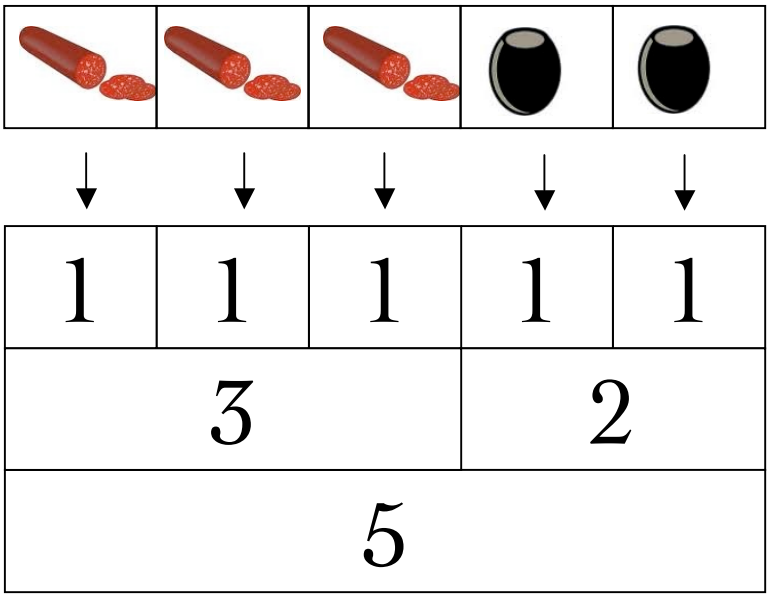
Student: Students choose their toppings and assemble their pizzas. Students Think Pair Share the similarities and differences of the pizzas. A gallery walk is another option to allow students to see their classmates' pizzas.

Model: Teacher demonstrates how to graph the pizza while students follow along one topping at a time. Example: "How many crusts do you use?" (Choral response: 1) "Let's cut out one little crust and glue it on our chart above the picture of the crust." Continue with all toppings.
Teacher models using pictures on the graph to create a pictograph.

Model: Teacher asks comparison questions. Teacher models how to use bar model to answer comparison questions.

Connections
Bar Models: Addition

Example 1: "How many pieces of pepperoni and olives are there together? There are three pieces of pepperoni and two pieces of olives."
Stick cutouts of pepperoni and olives on the board in a line.
Draw boxes around the pepperonis and olives.
Make a one-to-one correspondence between the topping pictures in a box and the boxes with the numbers in them.
Follow the diagram below.



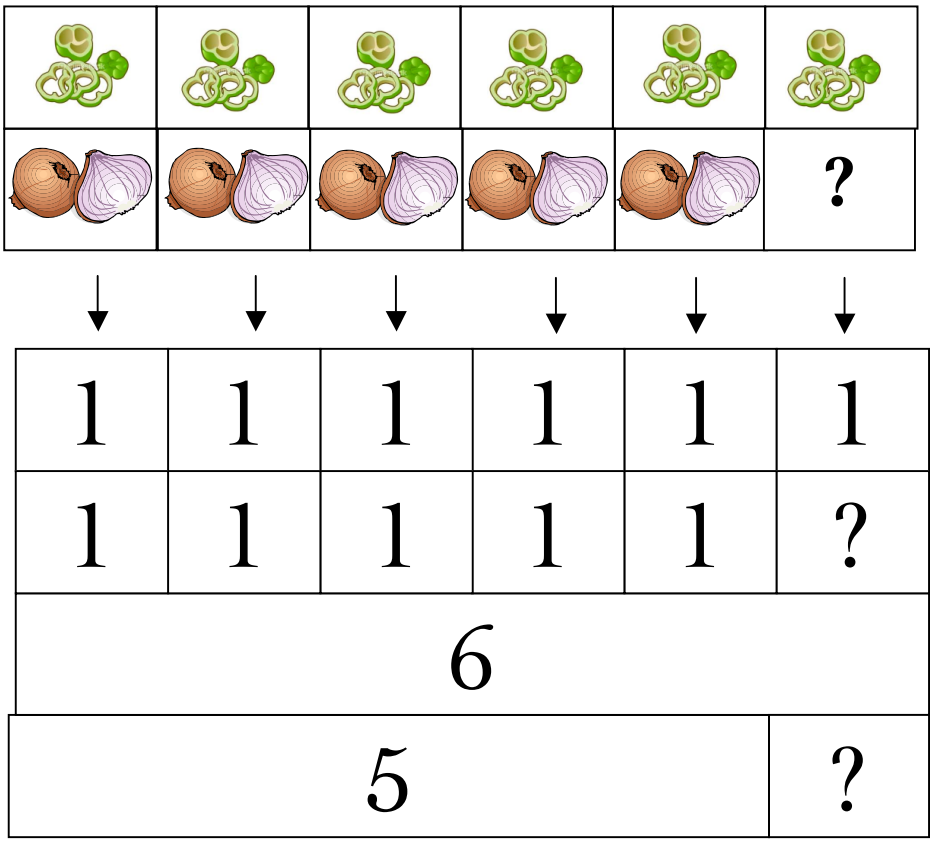
$3 + 2 = 5$

Student: Students come up with addition questions of their own and solve them using bar models.

Bar Models: Subtraction (Comparison)

Example 2: "How many more pieces of green pepper are there than onions? There are six pieces of green pepper and five pieces of onion."
Stick cutouts of green pepper and onion on the board so that you can compare them.
Make sure the children see the one-to-one correspondence of the pepperonis compared to the olives.
Draw boxes around the pepperonis and olives.

Follow the diagram below.



6-5=1

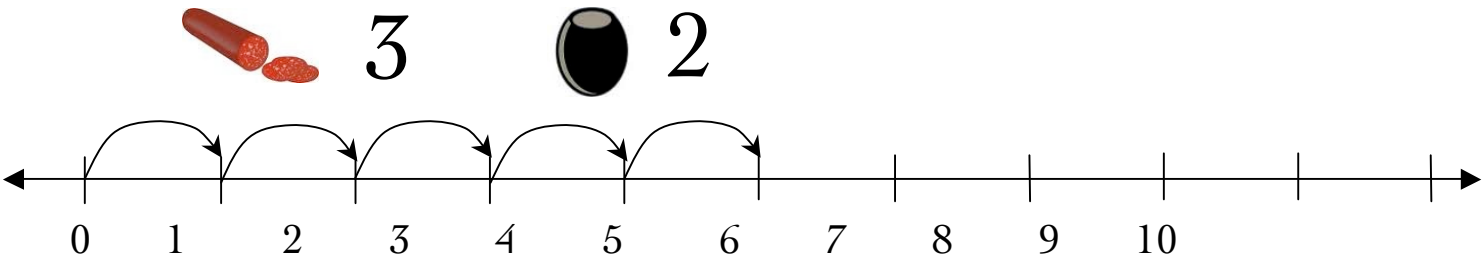
Student: Students come up with subtraction questions of their own and solve them using bar models.

Numberlines: Addition

Example 1: "How many pieces of pepperoni and olives are there together? There are three pieces of pepperoni and two pieces of olives."

Stick cutouts of pepperoni and olives on the board in a line.
Draw a number line. Make three jumps. Write the number three above it and place a pepperoni picture next to it. Make two more jumps. Write the number two above it and place an olive next to it. Discuss that 3 pepperonis and 2 olives make 5 toppings altogether.

Follow the diagram below.



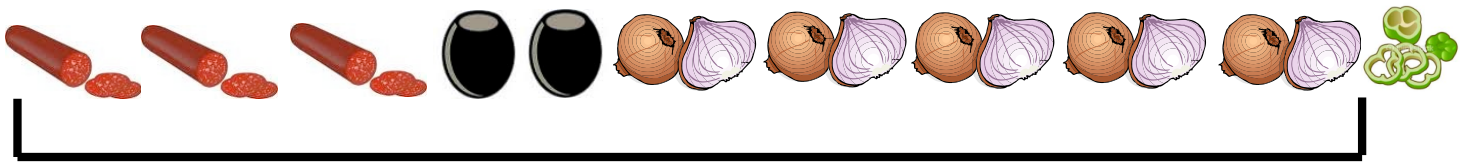
$$3 + 2 = 5$$

Student: Students come up with addition questions of their own and solve them using numberlines.

Decomposition: Addition

Teacher Note: On a new day take out the graph and have the students recreate their pizza, without gluing the pieces together, based on the data.

Example 1: "How many toppings did you have on your pizza? Let's practice first using my toppings"
Stick cutouts of all the toppings on the board in a line.
"There are a lot of toppings. I am going to count them by making groups of ten."
Follow the diagram below.



10 1

$$10+1=11$$

Student: Students add up there toppings, making groups of 10.

Model: Teacher models adding up toppings by making groups of 5s and then by making groups of 2s.

Connections:
1. The class adds up all the toppings used and groups them in either 10s, 5s, or 2s when counting.
2. Teacher bakes a pizza for the students and the class graphs the pizza toppings.
3. Students develop questions to ask each other based on the graph data.
4. *A Pizza the Size of the Sun* by Jack Prelutsky
5. The Little Red Hen Makes a Pizza- Philemon Sturges

PIZZA GRAPH

by:

10							
9							
8							
7							
6							
5							
4							
3							
2							
1							
	Crust 	Cheese 	Pepperoni 	Mushroom 	Olives 	Green Pepper 	Onion 

Pizza Count

This pizza has _____ crust.

This pizza has _____ cheese slices.

This pizza has _____ pepperonis.

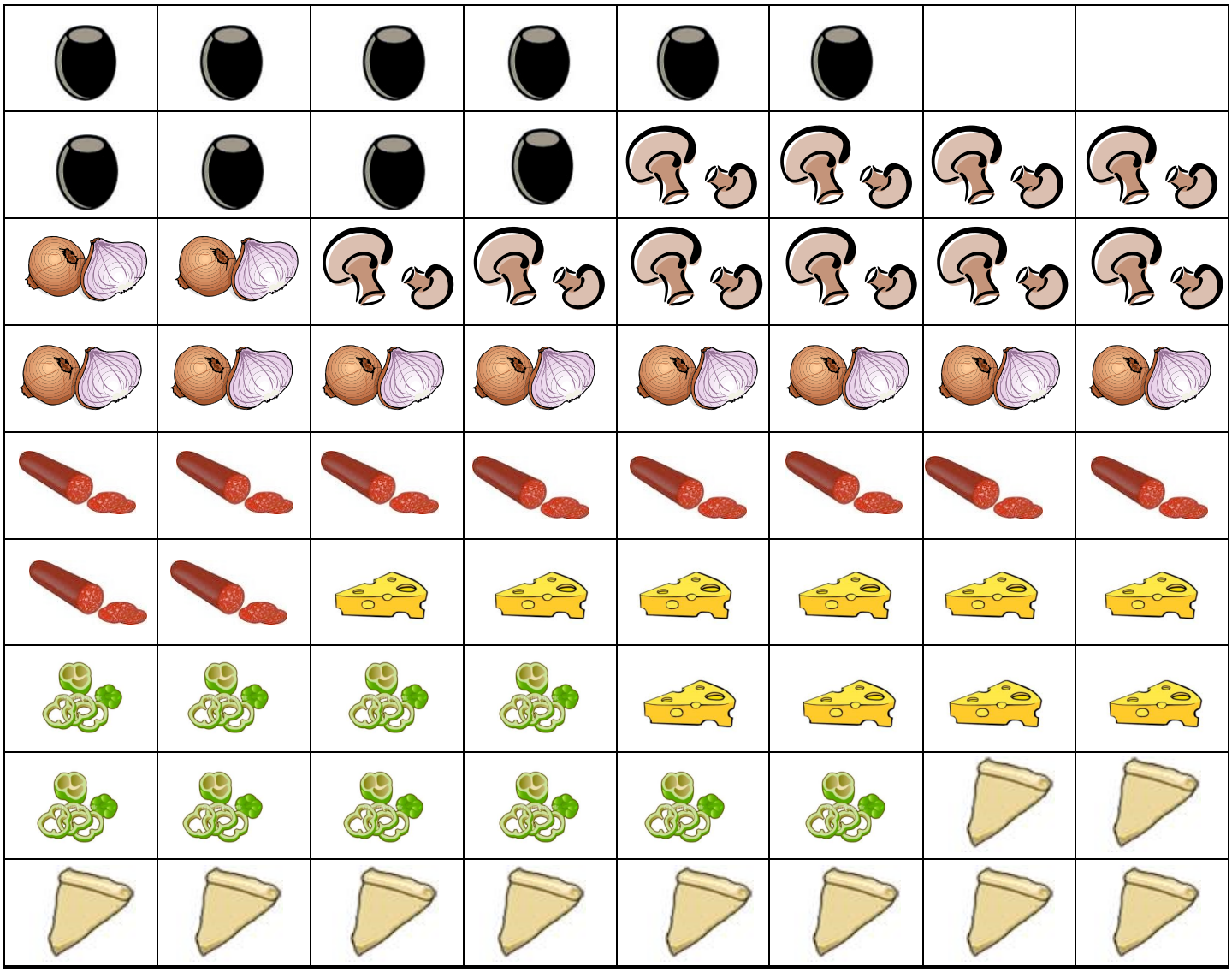
This pizza has _____ mushrooms.

This pizza has _____ olives.

This pizza has _____ green peppers.

This pizza has _____ onions.

This pizza has _____.



Pizza Poem

Best Pizza Poetry

I'm making a pizza the size of the sun,
a pizza that's sure to weigh more than a ton,
a pizza too massive to pick up and toss,
a pizza resplendent with oceans of sauce.

I'm topping my pizza with mountains of cheese,
with acres of peppers, pimentos, and peas,
with mushrooms, tomatoes, and sausage galore,
with every last olive they had at the store.

My pizza is sure to be one of a kind,
my pizza will leave other pizza behind,
my pizza will be a delectable treat,
that all who love pizza are welcome to eat.

The oven is hot, I believe it will take,
a year and a half for my pizza to bake.
I hardly can wait till my pizza is done,
my wonderful pizza the size of the sun.