

# PIZZA FRACTIONS

## Project Based Learning

3rd Grade Print & Google Slides

**PIZZA, PIZZA**

**SELF REFLECTION:** Write a reflection of your experience with this project. How did you feel about the math problems and activities? Explain what you found easy to do and any difficulties you had while working on this project. Did you enjoy this project?

The pizza ovens take 45 minutes to cook a pizza. The pizza of the day. Answer the questions.

5. You and Ahmed open the restaurant. Caesar arrives at 10:50 a.m. What is the earliest time he can put a pizza in the oven?

6. Your work shift ends at 4:30 p.m. You have a large meatball pizza home to share with your family. How many pizzas should you put in the oven so that they all will be done by 4:30 p.m.?

I am  
som



The small olive pizza  
The medium cheese  
The large meatball pizza

### COOKING PIZZA-3

Mr. and Mrs. Garcia are celebrating their anniversary. They ordered a large cheese pizza to help you celebrate. Read and answer the questions.



- If each pizza is cut into 8 slices, how many slices do you have to help you share the pizza?
- If you share the pizza with 3 friends, how many slices does each person get?
- Your parents ordered 3 pizzas. How many slices do you have in total?
- Not everyone likes mushrooms. If 2 people don't eat mushrooms, how many slices of mushrooms are left?

### PIZZA FRACTIONS-5

#### PIZZA DATA-1

Your grade took a poll on their favorite pizza topping. Now, you and your classmates must create a bar graph using the data collected. Shade the bar graph based on the data below. Then, answer the questions.

Pepperoni IIII Olives IIII Mushrooms II  
Bacon IIII Tomatoes IIII

TOPPINGS	2	4	6	8	10	12	14	16
Pepperoni								
Meatballs								
Bacon								
Onions								
Olives								
Tomatoes								
Mushrooms								

1. Based on the number of votes, how many students are in your grade?

54 students

2. There are three classes in your grade. All three classes have the same number of students. Use division to show how many students are in each class.

$$54 \div 3 = 18 \text{ students per class}$$



## COOKING PIZZA-3



The pizza ovens take 45 minutes to pre-heat. How many pizzas can you cook in the oven in one day? Answer

5. You and Ahmed open the pizza oven. Caesar arrives at 10:50. What is the earliest time he can put a pizza in the oven so that it is ready by 11:30?

6. Your work shift ends at 11:30. How many pizzas can you cook in the oven so that you can finish at 11:30?



## PIZZA FRACTIONS-3

Ali likes mushrooms and olives.

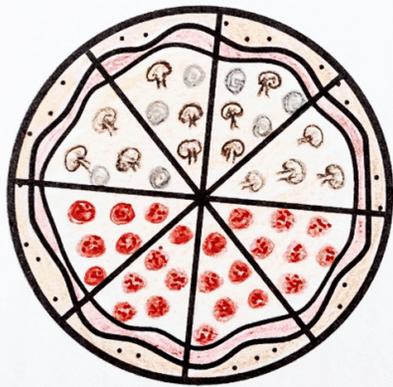
Kiana likes pepperoni.

Nikki likes mushrooms and peppers.

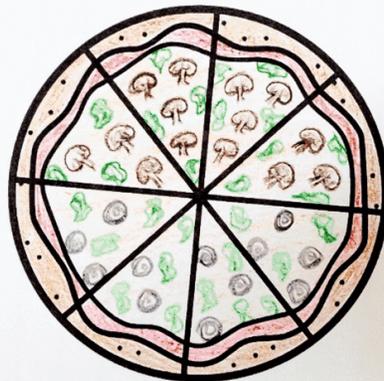
Dad likes peppers and olives.

Jojo likes cheese.

Mom likes mushrooms.



PIZZA 1



PIZZA 2



PIZZA 3

2. How many slices will the Barone family take home? Explain what toppings are on the left-over slices.

The Barone family will take home 1 slice of each combination of toppings. (6 slices)

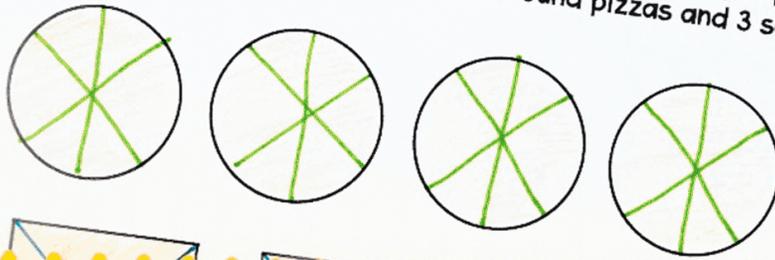
I understood the math problem and did not need help to complete the problems.

I used many strategies to solve the math problems efficiently.

I am sure that I am ready for a harder math problem.

## MAKE THE CUT-5

The Pumpkin Patch Nursery School brought 36 preschoolers to PIZZA, PIZZA for a field trip. Mr. Caesar asked you to cut the round pizzas into six equal pieces and the square pizzas into four equal triangles. Mr. Caesar made 4 round pizzas and 3 square pizzas. Cut the pizzas according to the plan.



1. Use multiplication to show the total number of slices you cut from the round pizzas.

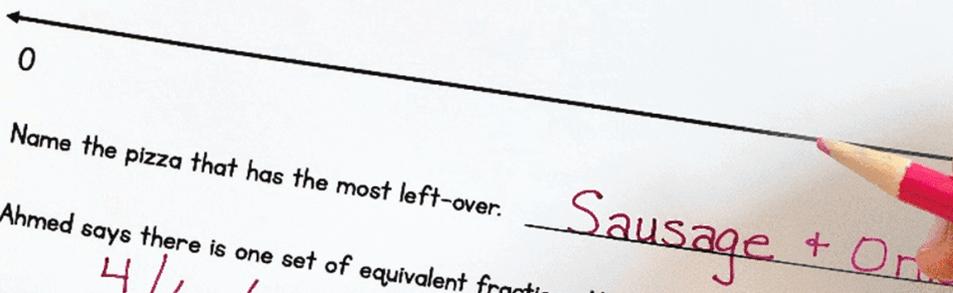
to show the  
ces you cut from

## PIZZA FRACTIONS-2

Mrs. Caesar makes a variety of pizzas and sells them as single slices during lunchtime. She asks you and Ahmed to record the amount of each pizza that is left at the end of today's lunch shift.

1. Read the data in the table below. It shows the fractional amount that is left after lunchtime. Order the fractions on the number line from smallest to largest. Label the fractions with the type of pizza.

Type of Pizza	CHEESE	PEPPERONI	GREEN PEPPER	MEATBALL	BLACK OLIVE	MUSHROOM	SAUSAGE AND ONION	CHICKEN PESTO
Fractional Amount Left	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{1}{6}$	$\frac{3}{8}$	$\frac{4}{6}$	$\frac{6}{8}$	$\frac{2}{3}$



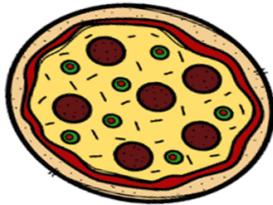
2. Name the pizza that has the most left-over. Sausage + Onion
3. Ahmed says there is one set of equivalent fractions. Name the two fractions. Which pizzas do  $\frac{4}{6}$  (Mushroom) +  $\frac{2}{3}$  (Chicken Pesto)
4. Write a fraction that is equivalent to  $\frac{6}{8}$ . Draw a model that shows they are equivalent. Explain how they can be equivalent.  
 $\frac{6}{8} + \frac{3}{4}$



## PIZZA FRACTIONS-1

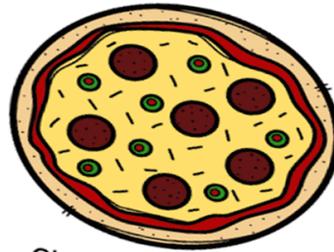
You are working at PIZZA, PIZZA, the best pizza shop in town. Today, you were asked Ahmed, the new employee, cut the pizzas before they are served. Use the line tool and lines to show Ahmed how to cut the pizzas based on the criteria from Mr. and Mrs. C

SMALL



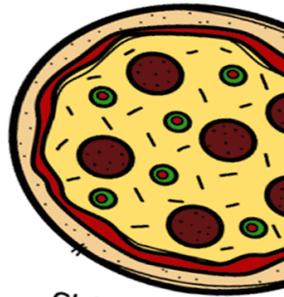
CUT INTO QUARTERS

MEDIUM



CUT INTO SIXTHS

LARGE



CUT INTO EIGHTH

1. During your lunch break, you and Ahmed equally share one large meatball pizza. How many slices will you eat?
2. If you were serving 4 medium pizzas to a group of friends, how many pieces would you have cut? Drag the pieces to create an array that shows your thinking.

$$\frac{6}{1}$$

$$\frac{1}{5}$$

$$\frac{1}{8}$$

$$\frac{1}{4}$$

# TABLE OF CONTENTS

1. For the Teacher, Standards and Directions
2. For the Student, Welcome to Pizza, Pizza, Tasks
3. Pizza Fractions (creating, ordering, equivalent fractions with word problems)
4. Cooking Pizza (telling time word problems)
5. Selling Pizza (money word problems)
6. Be a Pizza Maker (follow directions to make your own pizza with follow-up questions)
7. Make the Cut (cutting pizza word problems)
8. Pizza Data (make a bar graph, interpret data)
9. Challenge 1 (determine pizza costs and profit)
10. Challenge 2 (complete a table using pizza data, word problems based on making a profit)
11. Challenge 3 (create a poster for advertising spring specials)
12. Self-evaluation Reflection and Rubric
13. Answer Key



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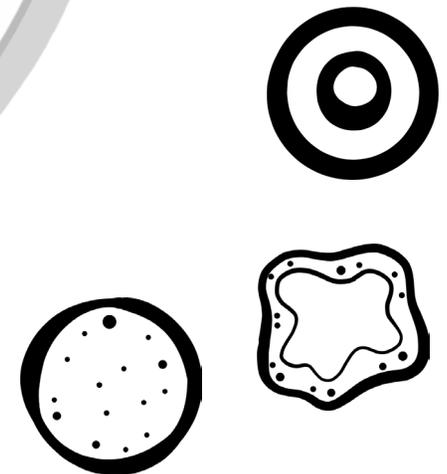
# FOR THE TEACHER

PIZZA FRACTIONS is a project-based learning activity that involves using operations, base-ten, fractions, and measurement standards to solve problems related to preparing and sharing pizza.

- 3.OA.A.1 Interpret products of whole numbers.
- 3.OA.A.2 Interpret whole-number quotients of whole numbers.
- 3.OA.A.3 Use mult/div within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 3.OA.B.6 Understand division as an unknown-factor problem.
- 3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
- 3.NBT.A.2 Fluently add and subtract within 1000.
- 3.NF.A.1 Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts.
- 3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.
- 3.NF.A.3.B Recognize and generate simple equivalent fractions.
- 3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes.
- 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set. Solve two-step problems using information presented in scaled bar graphs.

## DIRECTIONS:

1. Decide if your class will complete the project as a whole group, in small groups, or independently.
2. Students should complete the project over several days.
3. Preview the activity with your students.
4. Students will solve operation (+, -, x, ÷), place value, fraction, and measurement problems.
5. Challenge activities can be assigned or can be optional.
6. Students will complete the self-evaluation reflection and evaluation rubric.
7. Allow students an opportunity to share their completed projects.



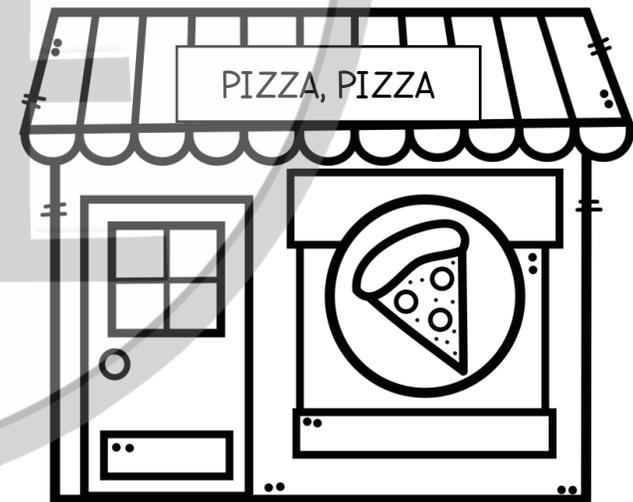
# FOR THE STUDENT

Welcome to your tasty pizza adventure. You have been hired to work at PIZZA, PIZZA, a new pizza restaurant in town. Mr. and Mrs. Caesar own the shop and are teaching you all about the pizza business. Did you know that pizza was first prepared in Naples, Italy? In the beginning, it was considered the food for the poor because it was simply a flat piece of bread covered in tomato sauce. Over time, toppings like meat, vegetables, and cheese were added to offer variety and to enhance the taste. Today, pizza as we know it is one of the most popular foods served around the world.

In this packet you will find lots of activities that require you to use your best math thinking using operations, fractions, and measurement. You will have the opportunity to be creative while having lots of fun at the same time. Read through the list of tasks below and then get started on your pizza adventure.

## HERE ARE YOUR TASKS:

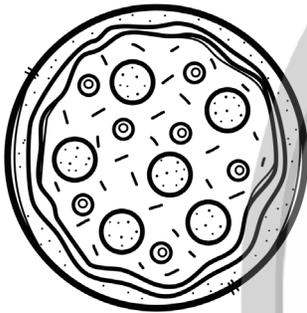
- Read each page carefully.
- Follow the directions for each page.
- Use strategies that will help explain your thinking.
- Take your time and do your best work.
- Give the challenge pages a try.
- Complete the self-reflection and evaluation rubric.
- Have fun!



# PIZZA FRACTIONS-1

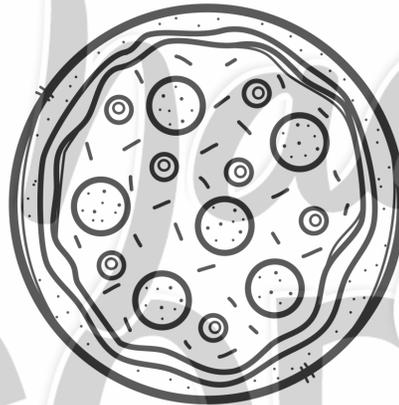
You are working at PIZZA, PIZZA, the best pizza shop in town. Today, you were asked to help Ahmed, the new employee, cut the pizzas before they are served. Draw lines to show Ahmed how to cut the pizzas based on the criteria from Mr. and Mrs. Caesar.

SMALL



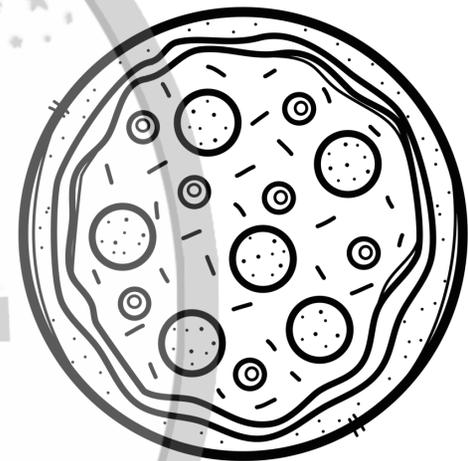
CUT INTO QUARTERS

MEDIUM



CUT INTO SIXTHS

LARGE



CUT INTO EIGHTHS

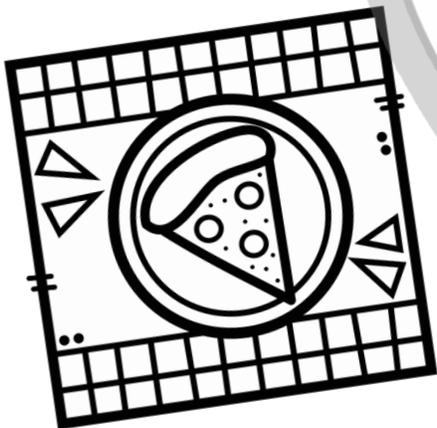
1. During your lunch break, you and Ahmed equally share one large meatball pizza. How many slices will you each get?
2. If you were serving 4 medium pizzas to a group of friends, how many pieces would you have cut? Show by drawing an array.

# PIZZA FRACTIONS-3

On Saturday, the Barone family came into Pizza, Pizza to celebrate their mom's birthday.



1. The family wants three large pizzas but cannot agree on toppings. Help them decide what to put on each pizza, based on their preferences. Read the information on the pages and develop a plan for the Barone family. Next, draw the toppings onto the pizzas. Then, write each person's name next to their slices to identify the ones they will eat.



Everyone will get 3 slices of pizza. Toppings can only be added to half or whole pizzas. All pizzas come with sauce and cheese. There will be slices left over.

# PIZZA FRACTIONS-4

Use the pizzas that you created for the Barone family to answer the following questions.

1. How many slices of pizza are there in total? Use multiplication to solve.

2. How many pizza slices have pepperoni on them? Write it as a fraction of one pizza.

3. How many slices have two toppings on them? \_\_\_\_\_

4. Write a fraction that shows how many slices *of the total* have olives on them.

Complete each statement.

5. There are \_\_\_\_\_ out of \_\_\_\_\_ total slices that have mushrooms on them.

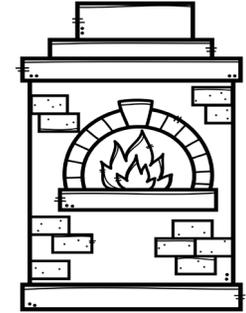
6. There are \_\_\_\_\_ slices of pizza with three toppings, not counting cheese.

7. Olives and \_\_\_\_\_ are on the same number of slices.

8. More slices have \_\_\_\_\_ than \_\_\_\_\_ on them.



# COOKING PIZZA-3



The pizza ovens take 45 minutes to warm up before you can cook your first pizza of the day. Answer the questions below based on this information.

5. You and Ahmed open the restaurant on Saturday morning at 10:30 a.m. and forget to start the ovens. When Mr. Caesar arrives at 10:50 a.m., he sees that the ovens are cold. If he turns the ovens on at 10:50 a.m., when is the earliest time he can put a pizza in the oven? Solve using the number line below.

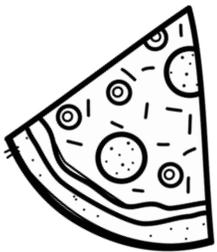


6. Your work shift ends at 4:30 p.m. on Saturday afternoon. You want to bring 1 small olive, 1 medium cheese, and 1 large meatball pizza home to share with your family for dinner. Name the times you would need to put the pizzas in the oven so that they all will be ready at 4:30 p.m.

The small olive pizza will go into the oven at \_\_\_\_\_.

The medium cheese pizza will go into the oven at \_\_\_\_\_.

The large meatball pizza will go into the oven at at \_\_\_\_\_.



# SELLING PIZZA-1

PIZZA, PIZZA offers the following specials at lunch. Use the information to answer the questions.

- One slice of pizza for \$1.00
- Two slices for \$ 1.69
- Three slices for \$2.47

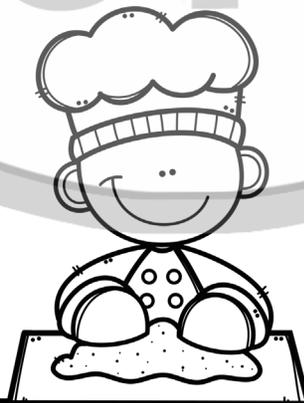
1. Rocko and Ruth each bought one slice of pizza and paid separately. How much money would they have saved if they bought the “two slices” special?
2. PIZZA, PIZZA also offers a **meal-deal**. For 25 cents, Mr. Caesar will add one soda to your order. The soda regularly costs 89 cents. How much money will Ruth save today if she gets the meal-deal, rather than buying a soda separately? Show how you know.
3. Rocko changes his mind and wants to order three slices of pizza with a soda. He quickly rounds the cost to the nearest dollar to see if he has enough money. What number did he round to?
4. Rocko gave Ahmed \$3.00 to pay for his meal-deal. How much change will Ahmed give Rocko?



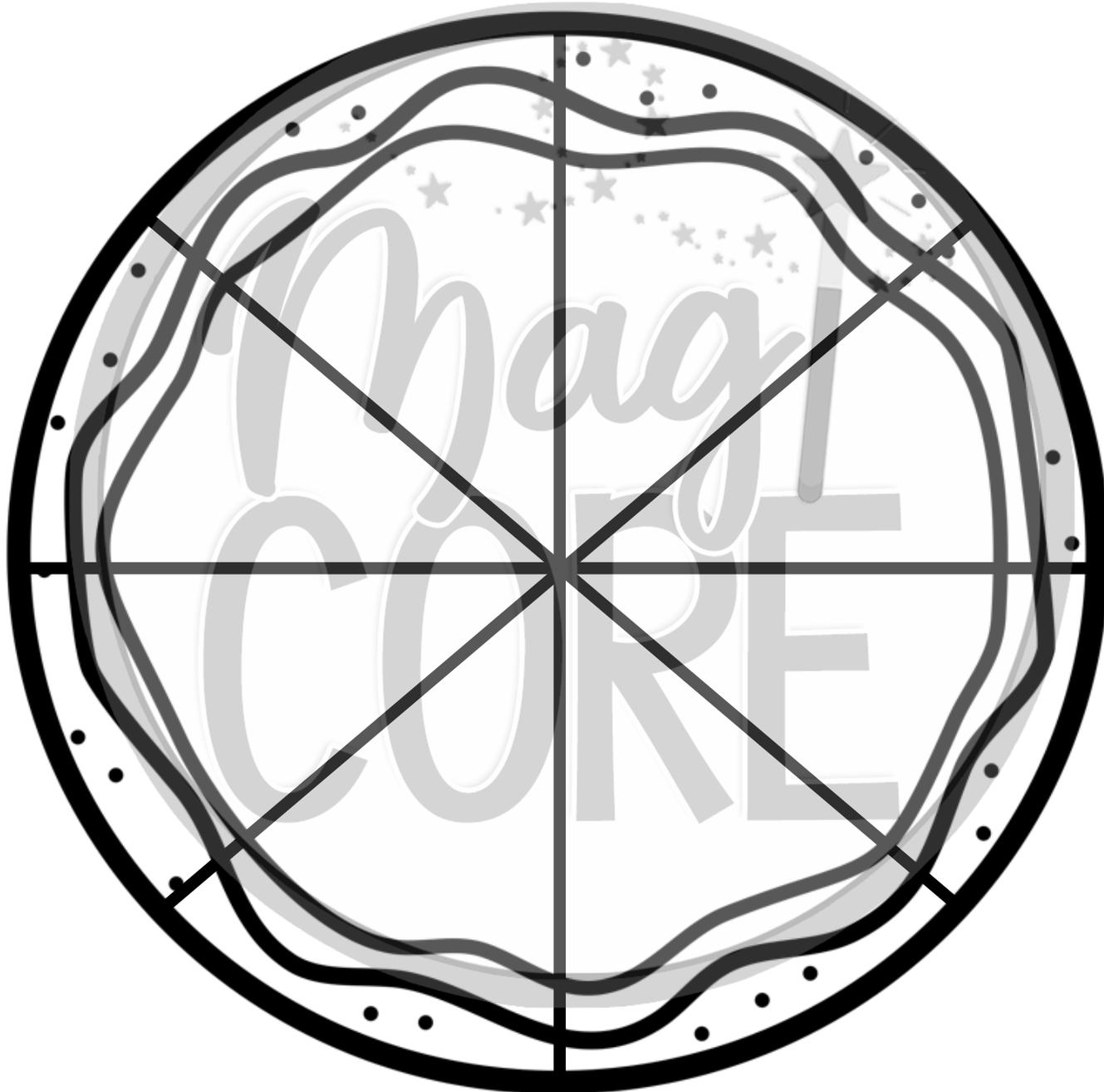
# BE A PIZZA MAKER!

You will be creating the perfect pizza to share with your best friend.  
Follow the directions below to help you make the best pizza ever!

- Look at the toppings on the next page. You must choose to put 3 of the toppings on your pizza.
- You must have toppings on every slice of your pizza. You can have more than one topping on a slice.
- Color your pizza yellow. Color the 3 toppings you will use on your pizza.
- Cut the toppings apart and arrange them on your pizza. You must add toppings to every slice.
- You must use different fractional amounts of the toppings you choose. For example: you could have pepperoni on  $\frac{1}{2}$  of your pizza, mushrooms on  $\frac{1}{4}$  of your pizza, and black olives on  $\frac{3}{4}$  of your pizza.
- Once you have the toppings arranged the way you want them, glue them on your pizza.
- When your pizza is finished, complete the table to show the fractions for each topping.



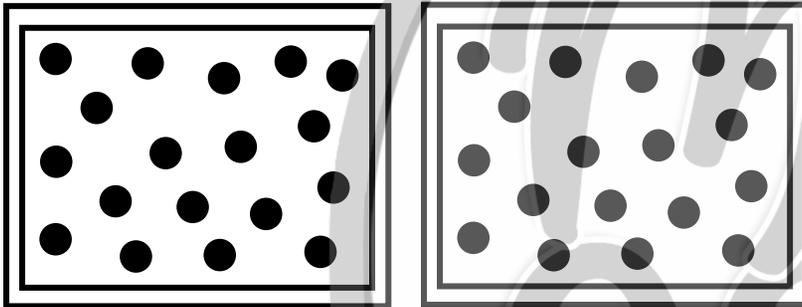
# BE A PIZZA MAKER!



# MAKE THE CUT-2

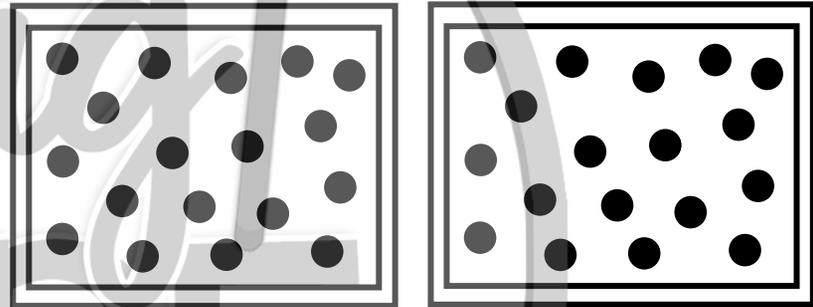
Sami, Miko, and Kristen come into PIZZA, PIZZA with their parents and grandpa to celebrate winning the soccer tournament. They order 4 pizzas and sodas. Dad asks for two pizzas to be cut into large slices for the adults and two pizzas be cut into smaller slices for the children. You decide to cut the adult's pizza into thirds and the children's pizza into sixths. Draw lines to show how you cut the pizzas.

1. Cut into thirds for the adults.



How many slices will you cut for adults?

2. Cut into sixths for the children.



How many slices will you cut for children?

3. If they share the slices equally, how many slices can each adult eat? Show with an equation.

4. Kristen eats 2 slices of pizza. Sami and Miko share the rest. They eat the same number of slices. How many slices did they each eat?

# PIZZA DATA-1

Your grade took a poll on their favorite pizza topping. Now, you and your classmates must create a bar graph using the data collected. Shade the bar graph based on the data below. Then, answer the questions.

Pepperoni IIII |  
 Bacon IIII IIII  
 Olives IIII II  
 Tomatoes IIII |  
 Meatballs IIII IIII IIII  
 Mushrooms II  
 Onions IIII |

TOPPINGS	2	4	6	8	10	12	14	16
Pepperoni								
Meatballs								
Bacon								
Onions								
Olives								
Tomatoes								
Mushrooms								

- Based on the number of votes, how many students are in your grade?
- There are three classes in your grade. All three classes have the same number of students. Use division to show how many students are in each class.

# \*CHALLENGE 1\*

Mrs. Caesar asks for your help to price the weekly specials. She wants to make a profit while offering fair prices. It costs \$8.00 to make a large pizza with mozzarella before adding additional toppings. Use the menu and topping price chart to help her determine the difference between what it will cost her to make each special and the amount she is selling each special for. This will be her profit.

## TOPPING PRICE CHART

Bacon * \$1.50	Garlic * 50 cents
Pepperoni * \$2.75	Peppers * 50 cents
Chicken * \$2.75	Olives * \$1.00
Meatballs * \$3.25	Mushrooms * \$1.25

## TODAY'S SPECIALS

Nana's Favorite * Mozzarella, Chicken, Bacon, and Garlic * \$15.50
Meat Lover's * Mozzarella, Meatballs, Bacon, and Pepperoni * \$18.75
Lulu's Veggie * Mozzarella, Garlic, Peppers, Olives, and Mushrooms * \$14.00
The Bomb * Mozzarella, Meatballs, Bacon, Pepperoni, Peppers, and Olives * \$19.50

1. Determine the cost to make each pizza. Write an equation that shows how you solved each problem.

Nana's Favorite

Meat Lover's

Lulu's Veggie

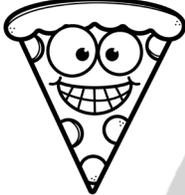
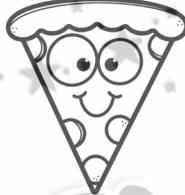
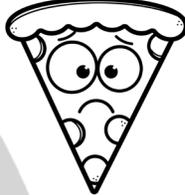
The Bomb

2. If Mrs. Caesar sells 5 of The Bomb pizzas, how much money will she earn as profit? Draw a model to show how you solved the problem.



# PIZZA, PIZZA

SELF REFLECTION RUBRIC: Shade one box of the rubric for each row that expresses how you would rate yourself on this math project.

		
I felt very confident about the math in this project.	I felt good about most of the math in this project.	A lot of the math in this project was too hard for me to do alone.
I understood the math problems and did not need help to complete the problems.	I understood most of the math problems but needed a little help to solve some of the problems.	I understood some of the math problems but needed help to solve most of the problems.
I used many strategies to solve the math problems efficiently.	I needed a little help using the best strategies for solving some of the math problems.	I had trouble knowing what strategies to use to solve many of the math problems.
I am sure that I am ready for a harder math project.	I want more time practicing similar math problems.	I feel I need assistance to complete similar math problems.

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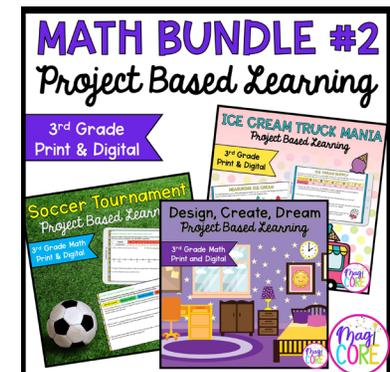
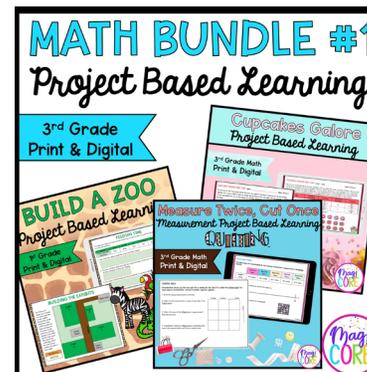


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