

PIZZA FRACTIONS

Project Based Learning

4th Grade Print & Google Slides

PIZZA, PIZZA

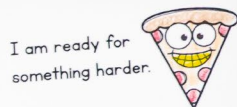
SELF REFLECTION: Write a reflection of your experience with this project. What problems and activities? Explain what you found easy. Did you enjoy this activity? Why or why not?

Mrs. Caesar makes a variety of pizzas to sell as single slices during lunch. She asks you to record how much of each pizza is sold at the end of today's lunch shift.

1. Read the data in the table below and write the fractions on the number line.

Type of Pizza	Bacon & Garlic	Spinach
Fractional Amount Left	$\frac{4}{6}$	

Color the pizza.



I am ready for something harder.

It was

0

2. Name the pizza.

3. Ahmed says

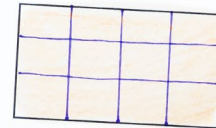
4. Compare 4. Show your

PIZZA FRACTIONS-2

and medium pizzas to sell as single slices during lunch. She asks you to record how much of each pizza is sold at the end of today's lunch shift.

MAKE THE CUT-5

The Pumpkin Patch Nursery School brought 39 preschoolers to PIZZA, PIZZA for a field trip. Mr. Caesar made 2 round pizzas and 2 rectangular pizzas. He asked you to cut each round pizza into ten equal slices and each rectangular pizza into 12 equal slices. Show how you would cut the pizzas, according to the plan.



1. Determine how many slices of pizza there are in all. Write an equation to show your thinking.

$$(2 \times 10) = 20 \quad (2 \times 12) = 24 \quad 20 + 24 = 44$$

2. One quarter of the total slices of round pizza has meatballs on it. How many slices have meatballs?

Round pizzas = 20 slices $20 \div 4 = 5$ slices have meatballs

3. If 4 slices of one rectangular pizza have pepperoni on them, what fractional part of one pizza does this represent? Explain how you know.

4 slices of 12 = $\frac{4}{12}$ $\frac{1}{3}$ of one pizza

4. After each preschooler has one slice of pizza, Ahmed wraps up the left-overs. How many slices of pizza will he wrap?

$$44 - 39 = 5 \text{ slices will be wrapped}$$

PIZZA FRACTIONS-3

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



1. The family wants to order 3 pizzas but cannot agree on toppings. Help them develop a plan for each pizza, based on their preferences onto the pizzas. slices to identify

PIZZA FRACTIONS-3

Ali likes mushrooms and olives.

Kiana likes pepperoni.

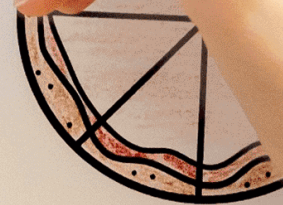
Nikki likes mushrooms and peppers.

Jojo likes cheese.

Mom likes pepperoni.



PIZZA 1



PIZZA 2



PIZZA 3

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

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 \$5.99 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

TODAY'S SPECIALS

Nana's Favorite * Mozzarella, Chicken, Bacon, and Garlic * \$15.50

* Mozzarella, Meatballs, Bacon, and Pepperoni * \$18.75

* Olives, and Mushrooms * \$14.00

* Olives * \$19.50

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

Bacon IIII

Meatballs IIII IIII

Onions IIII

Mushrooms IIII



Based on the data, how many students are in your grade?

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

64 students

$$64 \div 4 = 16$$

$\frac{1}{12}$

$\frac{1}{6}$



$\frac{6}{1}$

$\frac{1}{5}$

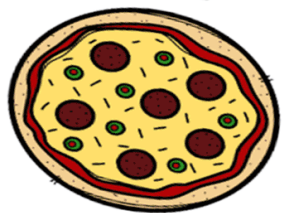
$\frac{8}{1}$

$\frac{1}{4}$

PIZZA FRACTIONS-1

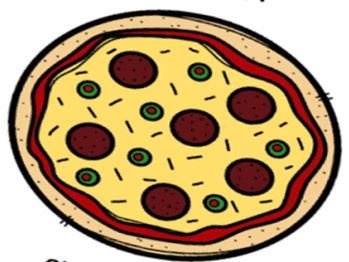
You are working at PIZZA, PIZZA, the best pizza shop in town. Today, you were asked Ahmed, the new employee, cut the pizzas before they are served. Use the line tool to show Ahmed how to cut the pizzas based on the criteria from Mr. and Mrs. C.

SMALL



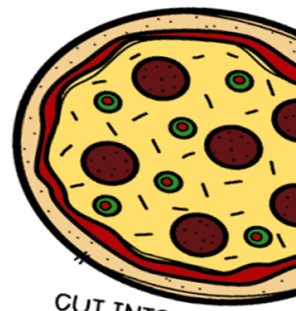
CUT INTO QUARTERS

MEDIUM



CUT INTO SIXTHS

LARGE



CUT INTO EIGHTHS

1. During your lunch break, you and Ahmed order one medium meatball pizza. Ahmed ate $\frac{2}{3}$ of the pizza, and you ate the remaining slices. How many many slices did you eat? Use the shape tool  to show with a model.
2. You and Ahmed had to cut large pizzas into 8ths for a to-go order. If you cut 56 slices, how many large pizzas are in the order? Use the shape tool  to show with a model.

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1. For the Teacher, Standards and Directions
2. For the Student, Welcome to Pizza, Pizza, Tasks
3. Pizza Fractions (Creating fractions, ordering fractions, equivalent fractions, word problems)
4. Cooking Pizza (Elapsed 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 (More pizza fraction word problems)
8. Pizza Data (Make a bar graph, interpret data, write your own comparison questions)
9. Challenge 1 (Determine pizza costs and profit)
10. Challenge 2 (Complete a table using pizza data, word problems using data)
11. Challenge 3 (Create a poster for advertising spring specials)
12. Self-evaluation Reflection and Rubric
13. Answer Key



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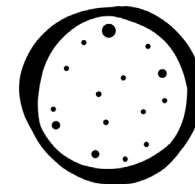
FOR THE TEACHER

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.

- 4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the 4 operations.
- 4.NBT.B.4 Fluently add & subtract multi-digit whole numbers using the standard algorithm.
- 4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, using strategies based on place value and properties of operations. Illustrate and explain by using equations, rectangular arrays, and area models.
- 4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models.
- 4.NF.A.2. Compare two fractions with different numerators and different denominators.
- 4.NF.B.3.D Solve word problems involving addition and subtraction of fractions.
- 4.NF.B.4.C Solve word problems involving multiplication of a fraction.
- 4.MD.A.2 Use the four operations to solve word problems.
- 4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit. Solve problems involving addition and subtraction of fractions.

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.



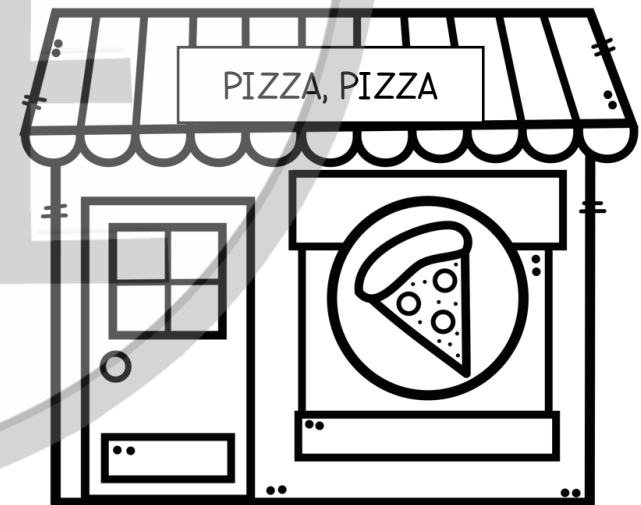
FOR THE STUDENT

Welcome to your tasty pizza adventure. You have been hired to work at PIZZA, PIZZA, a popular 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 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 math activities that require you to use your best thinking. You will have the opportunity to be creative while having lots of fun working in a pizza shop. Read through the list of tasks below and then get started on your pizza adventure.

HERE ARE YOUR TASKS:

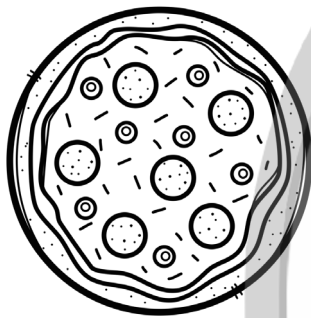
- Read each page carefully.
- Follow the directions for each page.
- Use strategies that will help explain your thinking.
- Take your time and do your best work.
- Give the challenge pages a try.
- Complete the self-reflection and evaluation rubric.
- Have fun!



PIZZA FRACTIONS-1

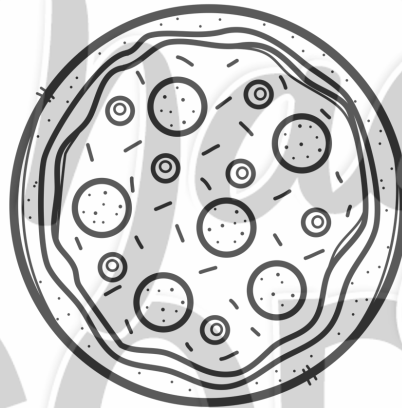
You are working at PIZZA, PIZZA, the best pizza shop in town. Today, you were asked to help Ahmed, the new employee, cut the pizzas before they are served. Draw lines to show Ahmed how to cut the pizzas based on the criteria from Mr. and Mrs. Caesar.

SMALL



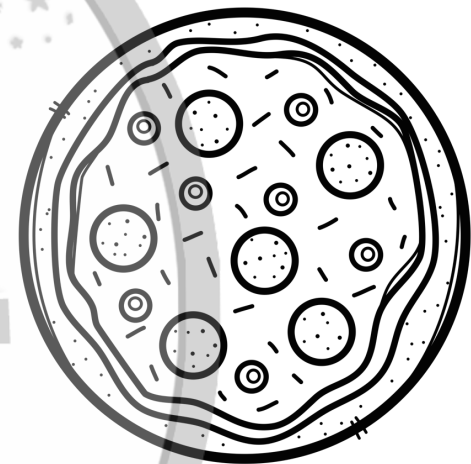
CUT INTO QUARTERS

MEDIUM



CUT INTO SIXTHS

LARGE

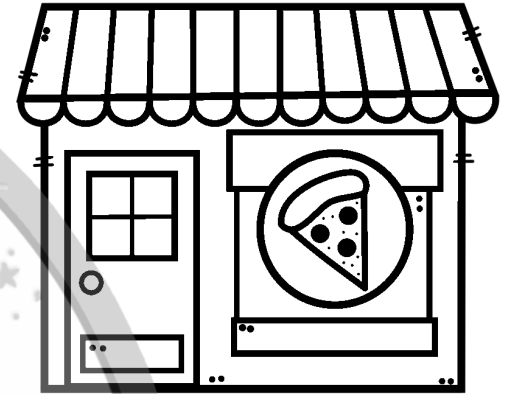


CUT INTO EIGHTHS

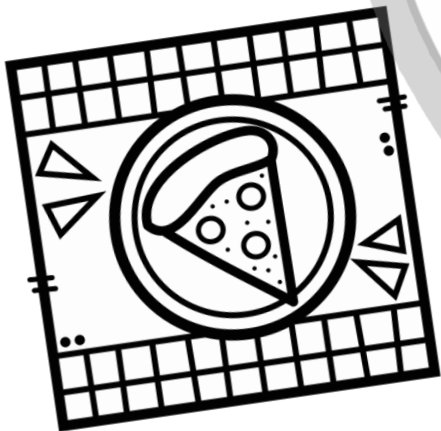
1. During your lunch break, you and Ahmed order one medium meatball pizza. Ahmed ate $\frac{2}{3}$ of the pizza, and you ate the remaining slices. How many many slices did you eat? Show with a model.
2. You and Ahmed had to cut large pizzas into 8ths for a to-go order. If you cut 56 slices, how many large pizzas are in the order? Show with a model.

PIZZA FRACTIONS-3

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



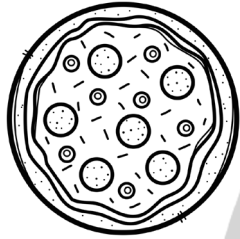
1. The family wants three large pizzas but cannot agree on toppings. Help them decide what to put on each pizza, based on their preferences. Read the information on the pages and develop a plan for the Barone family. Next, draw the toppings onto the pizzas. Then, write each person's name next to their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



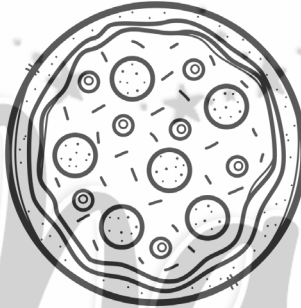
Everyone will get 3 slices of pizza. Toppings can only be added to half or whole pizzas. All pizzas come with sauce and cheese. There will be slices left over.

COOKING PIZZA-1

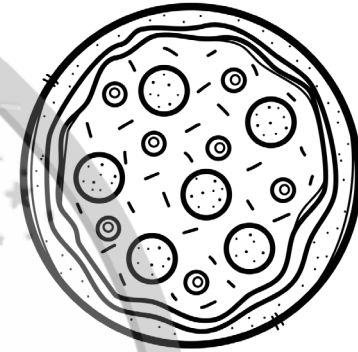
On Saturday afternoon, it is your job to keep track of the cooking times for all pizza orders. There are two ovens that can hold up to five pizzas each. Use the cooking times below to answer the questions.



SMALL PIZZAS--18 MINUTES



MEDIUM PIZZAS--24 MINUTES



LARGE PIZZAS--30 MINUTES

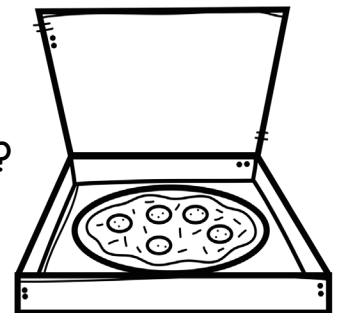
1. A family of 4 people orders one small and one large pizza for dinner. You know that the pizzas must come out of the oven at the same time so that they will be hot when they are served. How long will the large pizza be in the oven when you put the small pizza in to cook? Explain how you know.
2. Twelve students from your school come to celebrate a birthday. The group orders 2 large pizzas, 3 medium pizzas, and 2 small pizzas. Describe a plan for how you will cook the pizzas so they will all come out of the ovens at the same time. You can use both ovens.

SELLING PIZZA-1

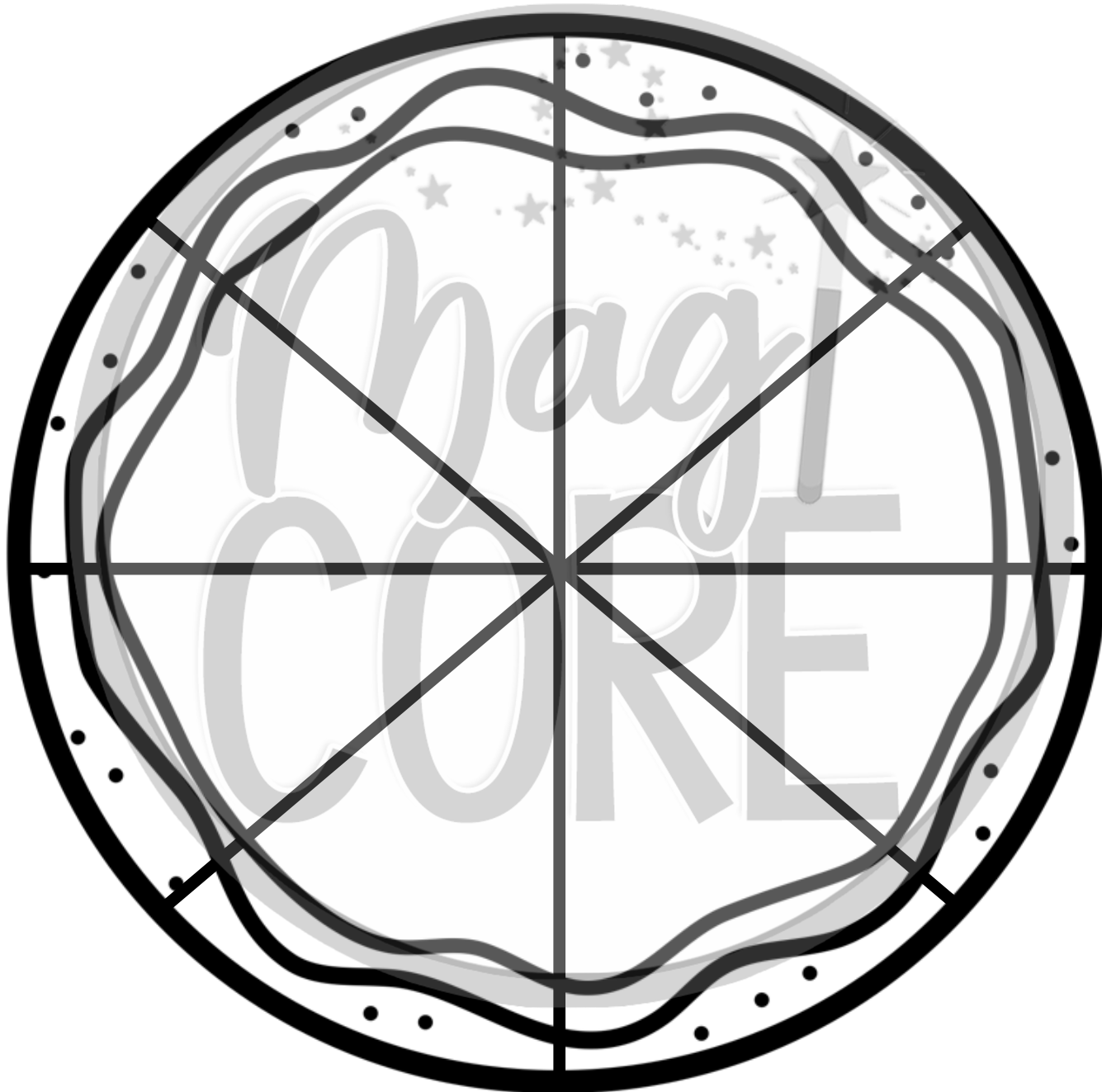
PIZZA, PIZZA offers the following specials at lunch. Use the information to answer the questions.

- 1 SLICE OF PIZZA FOR \$1.19
- 2 SLICES FOR \$ 1.99
- 3 SLICES FOR \$2.79

1. Rocko and Ruth each bought one slice of pizza and paid separately. How much money would they have saved if they had bought the **2 slices** special?
2. What is the difference in cost between the **2 slices** special and the **3 slices** special?
3. PIZZA, PIZZA also offers a **meal-deal** at lunchtime. For 75 cents, Mr. Caesar will add one soda to your order. The soda regularly costs \$1.50. How much money will Ruth save today when she buys the **2 slices** special if she adds a **meal-deal** soda to her order? Show how you know.
4. Rocko decided to order the **3 slices** special with a **meal-deal** soda. How much more money will he spend than Ruth?
5. Rocko gave Ahmed \$4.00 to pay for his pizza and soda. How much change will Ahmed give Rocko?



BE A PIZZA MAKER!



BE A PIZZA MAKER!

Complete the table and answer the questions below.

TOPPING KEY	Is on _____ out of 8 slices	Write as a fraction
Green Pepper		
Pepperoni		
Black Olive		
Mushroom		

1. How many slices have pepperoni?

2. How many slices have 2 toppings?

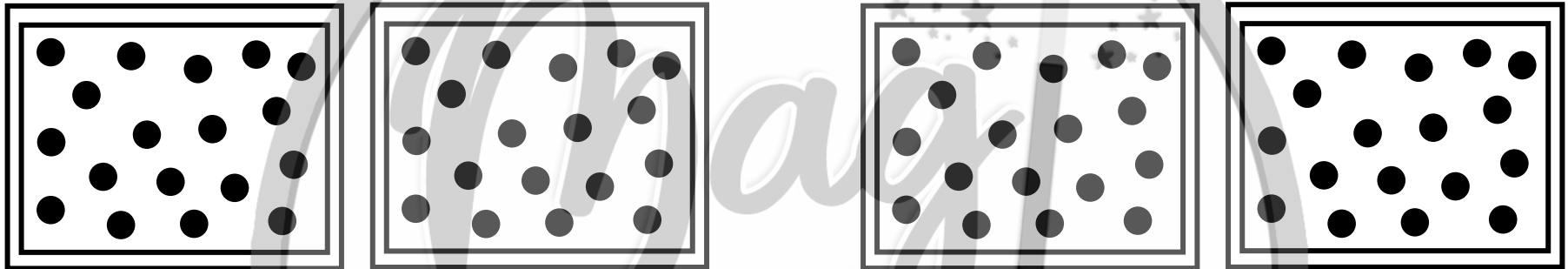
3. Write the fraction that shows the number of slices with 2 toppings.

4. How many of your slices have 3 toppings?

5. Write the fraction that shows the number of slices with 3 toppings.

MAKE THE CUT-2

Sami, Miko, and Kristen come into PIZZA, PIZZA with Mom, Dad, Grandmother, and Grandfather to celebrate the end of the school year. They order 4 large pizzas and soda. Dad asks for two pizzas to be cut into a total of 8 equal slices for the adults and two pizzas be cut into a total of 12 equal slices for the children. You must decide how to cut each pizza. Draw lines to show how you cut the pizzas.



Questions 1 & 2, circle the correct answer.

1. Adult pizzas are cut into *eighths*, *quarters*, *sixths*.
2. Children's pizzas are cut into *eighths*, *quarters*, *sixths*.
3. Why do you think Dad asked for the pizzas to be cut differently?
4. How many slices can each adult eat if they share them equally? Show with an equation.
5. Kristen thinks if the children each eat $\frac{1}{3}$ of the slices, they will get 3 slices each. Is she correct? Explain.

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  Olives  Meatballs  Onions 
 Bacon  Tomatoes  Mushrooms 

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

- Based on the data, how many students are in your grade?
- There are four classes in your grade. All 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 \$5.99 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.

Nana's Favorite

Meat Lover's

Lulu's Veggie

The Bomb

2. On Saturday, Ahmed served three times as many Meat Lover's pizzas as Lulu's Veggie pizzas. He served 15 Meat Lover's. How many of Lulu's Veggie pizzas did he serve? Write an equation to show your thinking.

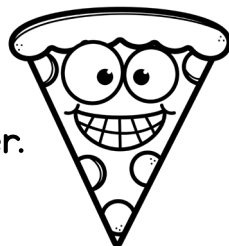
PIZZA, PIZZA

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 activity? Why or why not?

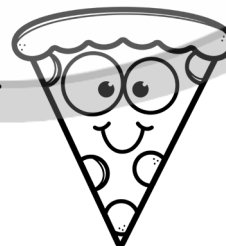
RATE THIS PROJECT

Color the pizza of the statement you most agree with.

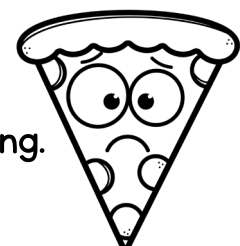
I am ready for something harder.



It was just right.

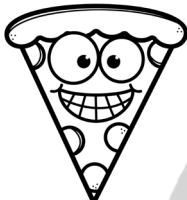
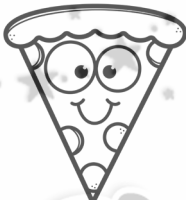
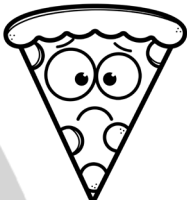


I found this very challenging.



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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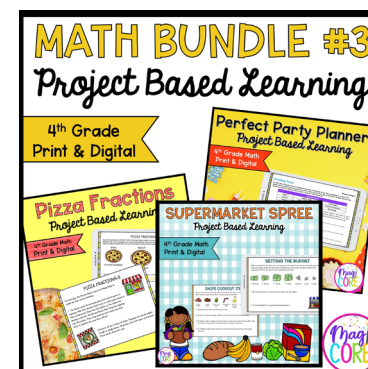
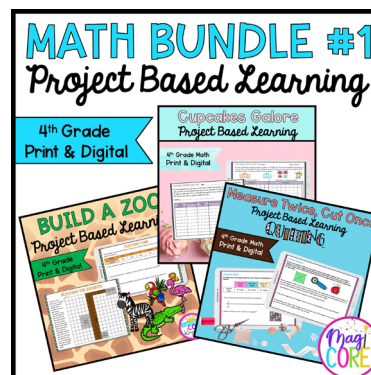
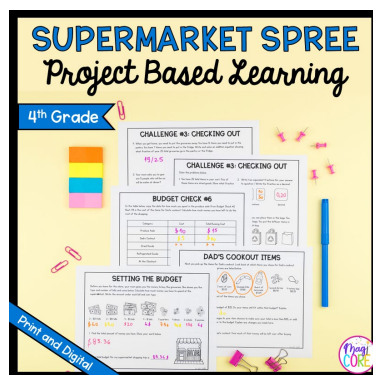


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