

RUN A PIZZA PLACE FRACTION PROJECT


EASY-PREP

PRINT & DIGITAL

14 FUN TASKS

A "REAL LIFE" MATH PROJECT

RUN A PIZZA PLACE: A Fraction Project



Incorporate practical, real-life application of 3rd and 4th grade fraction concepts including:

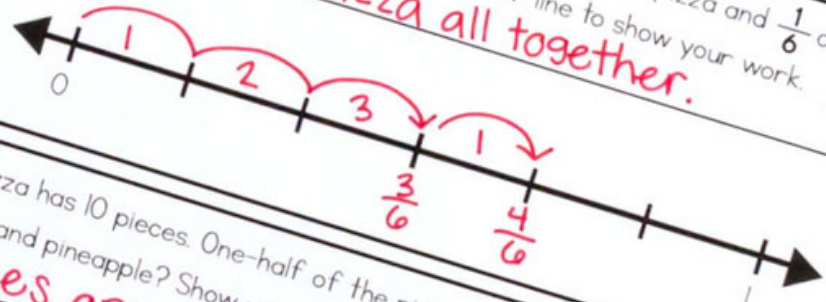
- fractions on a number line
- identifying and comparing simple equivalent fractions
- visual models

TASK #9

PIZZAS ON A NUMBER LINE

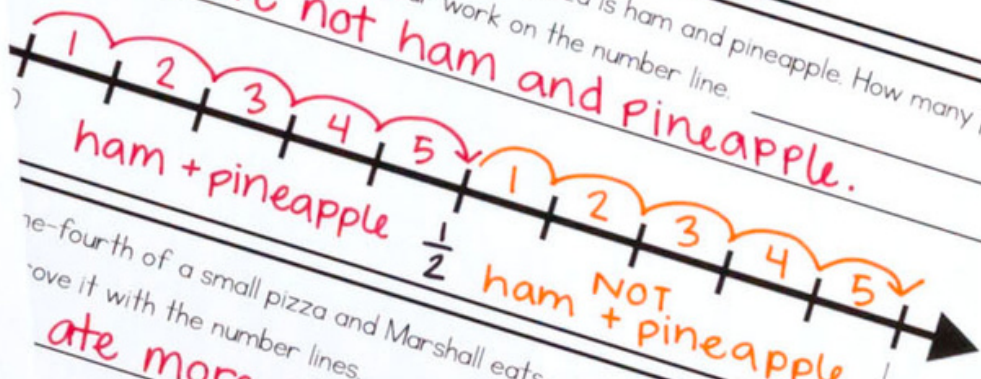
The Smith family ordered two pizzas. They ate $\frac{3}{6}$ of one pizza and $\frac{1}{6}$ of the second one. How much pizza did they eat in all? Use a number line to show your work.

They ate $\frac{4}{6}$ of a pizza all together.




4 medium pizzas has 10 pieces. One-half of the pizza is ham and pineapple. How many pieces are NOT ham and pineapple? Show your work on the number line.

5 pieces are not ham and pineapple.



Three-fourth of a small pizza and Marshall eats one-sixth of a small pizza. Who ate more pizza?

Marshall ate more pizza.



TASK #11

WHO ATE MORE?

You'll serve 9 tables in all today. Let's take a look at what they are eating!

Fill in the chart to show how much of their pizza is left.

Use the chart to answer the questions:

Which table ate the most pizza?
Table #5

Which table ate the least pizza?
Table #2

Order the fractions of pizza eaten from least (smallest) to greatest (largest)
 $\frac{3}{10}, \frac{6}{10}, \frac{7}{10}, \frac{8}{10}, \frac{9}{10}$

How much more pizza did Table #5 eat than Table #2? Write a fraction.
 $\frac{6}{10}$

of pizza left over from one of the tables. Write the



Table # 1 Table # 3 Table # 4

that show equivalent (equal) fractions. How do you know that they

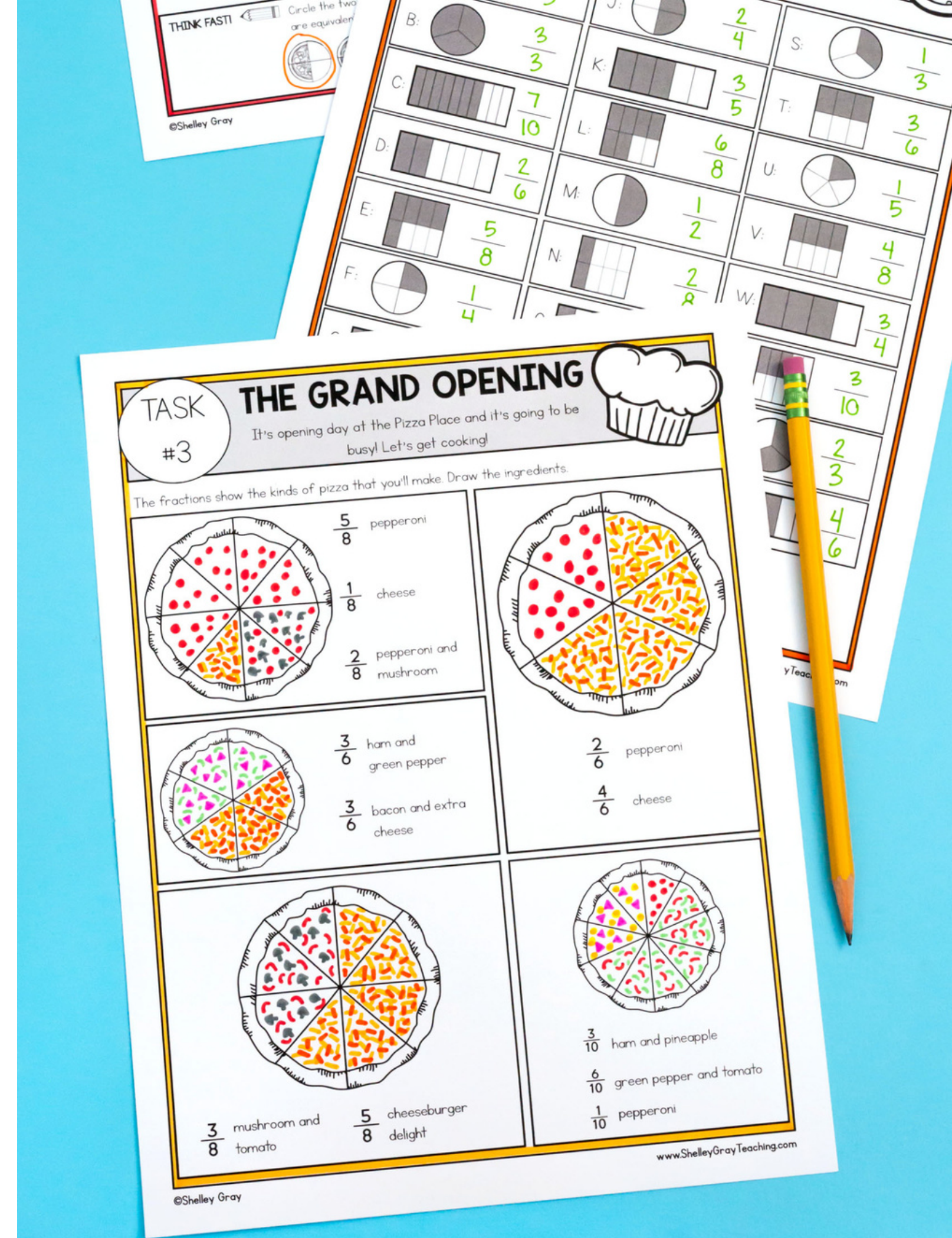
they take up the same amount of pizza

Fractions are **fun** and **easy-to-understand** when the content is relevant and engaging!

This high-interest, jam-packed fraction project will **bring fractions to life** for your students, helping them understand what fractions really mean and how they are used in the **real world**.

"WOW! THIS PROJECT COVERS IT ALL. MY STUDENTS WERE SO FRUSTRATED WITH FRACTIONS; THIS PACKET ALLOWED ME TO BREAK DIFFERENT DOMAINS DOWN INTO DETAIL AND EXPLANATION. WE ENJOYED DOING THIS AS A CLASS OVER TIME. IT IS ALSO FUN TO SEE THEM CREATE THEIR OWN PIZZA POSTER."

MARIA



YOUR STUDENTS WILL...

Represent fractions on visual models and interpret fraction data.

Brainstorm a restaurant name and design a poster to advertise.

TASK #1 THE PLAN
 Your very own pizza place? You can't believe it! Let's get started!

First, think of a name for your pizza place.

It'll be very important to advertise! Design a poster that you can put up around town.

TASK #2 THE MENU
 You will be known for your amazing pizza, but it's important to offer other choices too. Let's create the menu!

PIZZA	OTHER MEAL OPTIONS	BEVERAGES
Pizza by the Slice \$_____	Spaghetti and Meatballs \$5.00	Lemonade \$1.50
Small Pizza \$8.00	Lasagna \$4.00	Iced Tea \$1.50
Medium Pizza \$10.00	Pasta Alfredo \$4.00	Juice \$1.00
Large Pizza \$_____	Side Salad \$_____	Coffee \$1.00
	Basket of Garlic Toast \$_____	Tea \$1.00

Use the clues below to complete the menu prices:

- Pizza by the slice is one-fourth of the price of a small pizza.
- A large pizza is \$3.00 more than a medium pizza.
- A side salad is one-half of the price of lasagna.
- A basket of garlic toast is one-half of the price of a medium pizza.

THINK FAST! You have \$6.00 in your pocket. Your friend says she has one-third of that amount. How much money does your friend have?

TASK #3 THE GRAND OPENING
 It's opening day at the Pizza Place and it's going to be busy! Let's get cooking!

The fractions show the kinds of pizza that you'll make. Draw the ingredients.

$\frac{5}{8}$ pepperoni
 $\frac{1}{8}$ cheese
 $\frac{2}{8}$ pepperoni and mushroom

$\frac{3}{6}$ ham and green pepper
 $\frac{3}{6}$ bacon and extra cheese

$\frac{3}{8}$ mushroom and tomato
 $\frac{5}{8}$ cheeseburger delight

$\frac{2}{6}$ pepper
 $\frac{4}{6}$ cheese

$\frac{3}{10}$ ham and pineapple
 $\frac{6}{10}$ green pepper
 $\frac{1}{10}$ pepperoni

At the Grand Opening, you survey people to find out what their favorite type of pizza is. This will help your business! Here are the results:

FAVORITE TYPE OF PIZZA

	CHEESE	PEPPERONI	HAM AND PINEAPPLE	PEPPERONI AND MUSHROOM	DELUXE

Each space on the graph represents one-twelfth of the people. Transfer the data.

Suppose that each space on the graph represents 10 people. Answer the questions:

- How many people prefer each type of pizza?
 cheese _____ pepperoni _____ ham and pineapple _____
 pepperoni and mushroom _____ deluxe _____
- What fraction of people prefer each type of pizza?
 cheese _____ pepperoni _____ ham and pineapple _____
 pepperoni and mushroom _____ deluxe _____
- Altogether, what fraction of people prefer cheese and pepperoni pizza? _____
- Altogether, what fraction of people prefer ham and pineapple and deluxe? _____
 Now represent this fraction another way: _____
- Altogether, what fraction of people prefer cheese, pepperoni, and deluxe pizza? _____
 Now represent this fraction another way: _____

Work with fractions and money to complete the missing menu prices.

Work with fractions in different forms and identify numerators.

Represent fractions in word form, number form and with visual models & work with simple equivalent fractions.

TASK #4 PIZZA DELIVERY
Let's take a look at some of the delivery orders from today.

PIZZA DELIVERY ORDER #1			
Type of Pizza	How many?	Cost per Pizza	Total Cost
Cheese	3	\$8.00	
Pepperoni	2	\$8.00	
Bacon and Mushroom	3	\$8.00	
Delivery Charge			\$5.00
Total Cost			

Answer the Questions:
1. How many pizzas were ordered altogether? _____
2. What fraction of the pizzas are pepperoni?

NUMBER FORM: _____
WORD FORM: _____

3. What fraction of the pizzas are bacon and mushroom?

NUMBER FORM: _____
WORD FORM: _____

PIZZA DELIVERY ORDER #2			
Type of Pizza	How many?	Cost per Pizza	Total Cost
Horn and Pineapple	1	\$8.00	
Cheese	1	\$8.00	
Pepperoni and Bacon	2	\$8.00	
Delivery Charge			\$5.00
Total Cost			

Answer the Questions:
1. How many pizzas were ordered altogether? _____
2. What fraction of the pizzas are horn and pineapple?

NUMBER FORM: _____
WORD FORM: _____

3. What fraction of the pepperoni and bacon?

NUMBER FORM: _____
WORD FORM: _____

THINK FAST! Circle the fractions that have a NUMERATOR of $\frac{4}{5}$.

$\frac{1}{5}$ $\frac{2}{5}$ $\frac{4}{5}$ $\frac{5}{5}$ $\frac{6}{5}$

©Shelley Gray

TASK #5 DRINK ORDERS
The first job after greeting your customers is to take drink orders.

First, let's choose a color to represent each type of drink. Shade the crayons to show the colors that you will use.

Lemonade Iced Tea Juice Coffee Tea

Shade the drinks and represent each type of drink as a fraction of the total.

ORDER FORM			Shade the cups:
Type of Drink	Quantity	Fraction of the Total Drinks	
Iced Tea	3		
Juice	2		
Lemonade	1		

ORDER FORM			Shade the cups:
Type of Drink	Quantity	Fraction of the Total Drinks	
Coffee	4		
Tea	5		
Juice	1		

ORDER FORM			Shade the cups:
Type of Drink	Quantity	Fraction of the Total Drinks	
Lemonade	3		
Tea	2		
Juice	1		
Coffee	6		

Fill in the missing spaces on the chart and then shade the cups.

Type of Drink	Fraction of the Total Drinks	Fraction in Word Form
Coffee	$\frac{1}{10}$	
Tea	$\frac{2}{10}$	
Juice		one-tenth
Lemonade	$\frac{4}{10}$	
Iced Tea		two-tenths

©Shelley Gray

Identify fractions using visual models and compare to one-half.

TASK #6 A NEW SPECIALTY
You've introduced two new types of specialty pizza to your restaurant! Let's find out what they are!

First of all, write the fraction that is represented for each letter.

A:	J:	S:
B:	K:	T:
C:	L:	U:
D:	M:	
E:	N:	
F:	O:	
G:	P:	
H:	Q:	
I:	R:	

Now let's figure out the two new kinds of specialty pizza!

The first kind of specialty pizza is:

$\frac{1}{2}$ $\frac{2}{2}$ $\frac{3}{2}$ $\frac{4}{2}$ $\frac{5}{2}$ $\frac{6}{2}$ $\frac{7}{2}$ $\frac{8}{2}$ $\frac{9}{2}$ $\frac{10}{2}$

The second kind of specialty pizza is:

$\frac{1}{3}$ $\frac{2}{3}$ $\frac{3}{3}$ $\frac{4}{3}$ $\frac{5}{3}$ $\frac{6}{3}$ $\frac{7}{3}$ $\frac{8}{3}$ $\frac{9}{3}$ $\frac{10}{3}$

Which of the specialty pizzas would you prefer? Draw a picture of what you think it would look like.

THINK FAST! Circle the fractions that are greater than one-half.

$\frac{1}{3}$ $\frac{4}{5}$ $\frac{4}{4}$ $\frac{1}{6}$ $\frac{3}{4}$ $\frac{7}{10}$ $\frac{1}{4}$ $\frac{4}{5}$ $\frac{5}{6}$

©Shelley Gray www.ShelleyGrayTeaching.com

Let's work with equivalent fractions.

This picture shows $\frac{4}{10}$. Does it also represent $\frac{2}{5}$? Explain how you know.


Represent the fraction three-fifths.

Represent the fraction one-third.


Problem-solve using fractions, compare, and represent in word and number form.

TASK #7 PIZZA PROBLEMS!
 In any business or job, you will run into problems that need to be solved! Let's take a look at a few of the problems that you encounter this week.

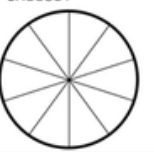
A large pizza has 12 slices. Your customer wants $\frac{1}{4}$ with pepperoni and the rest with ham. How many pieces have pepperoni? How many pieces have ham?



You usually put 3 cups of cheese on a pizza. How much cheese will you put on a pizza?



You cut a pizza into 10 slices. Five-tenths of the pieces are bacon and mushroom. How much cheese?



THINK FAST! Pizza is your favorite or $\frac{1}{6}$ of a pizza? Write a fraction.

TASK #10 A PIZZA PARTY
 Today you're hosting a birthday party at your house. Let's get planning!

Here are the facts:
 There are 10 people at the pizza party. 8 of them are kids and two are adults. Write each as a fraction.

What fraction of the people are kids? $\frac{8}{10}$
 What fraction of the people are adults? $\frac{2}{10}$

Fraction as a number: $\frac{8}{10}$
 Fraction in words: eight-tenths

Each person will eat 3 pieces of pizza. How many pieces will we need all together?

We will make large pizzas for this group. A large pizza has 12 pieces. How many pizzas do we need to make?





You'll be putting out 2 pitchers of lemonade, 1 pitcher of iced tea, and 1 pitcher of water at the party. Represent each type of drink as a fraction of the total pitchers.

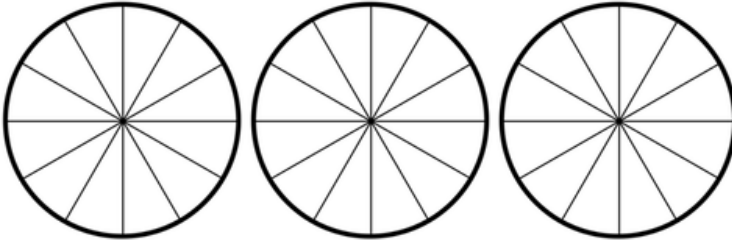
Pitchers of Lemonade (as a fraction): $\frac{2}{4}$
 Pitchers of Iced Tea (as a fraction): $\frac{1}{4}$
 Pitchers of Water (as a fraction): $\frac{1}{4}$

THINK FAST! Write three fractions that are greater (more) than two-fifths.

Now let's make the pizzas!

Here are the three pizzas that we'll make. Decide how much of each kind of pizza you should make. Then choose a color to represent each kind of pizza and shade the diagrams to match.


$\frac{1}{2}$ pepperoni  $\frac{1}{2}$ ham and pineapple 
 $\frac{1}{2}$ cheese  $\frac{1}{2}$ deluxe 



Write each of the fractions from above in words:

Type of Pizza	Fraction in Number Form	Fraction in Words
Pepperoni		
Cheese		
Ham and Pineapple		
Deluxe		

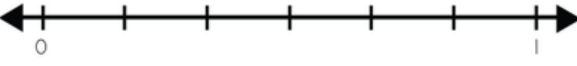
What's left?
 The shaded parts represent the pizza that is left over after the party. Write a fraction to represent the amount of pizza that is left.



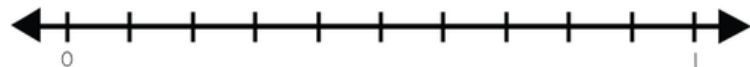
Add simple fractions.

TASK #9 PIZZAS ON A NUMBER LINE


The Smith family ordered two pizzas. They ate $\frac{3}{6}$ of one pizza and $\frac{1}{6}$ of the second one. How much pizza did they eat in all? Use a number line to show your work.





A medium pizza has 10 pieces. One-half of the pizza is ham and pineapple. How many pieces are NOT ham and pineapple? Show your work on the number line.



Maria eats one-fourth of a small pizza and Marshall eats one-sixth of a small pizza. Who ate more pizza? Prove it with the number lines.



Which of the pizzas does this number line represent? Circle it.

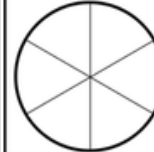
Represent fractions on a number line.

TASK #8 DOUBLE THE INGREDIENTS

A large pizza uses twice the amount of each ingredient as a small pizza. Double each amount on the chart to show the amount for a large pizza.

Ingredient	Amount for a Small Pizza	Double the fraction.	Amount for a Large Pizza
Sauce	$\frac{1}{2}$ cup	$\frac{1}{2} + \frac{1}{2} = 1$ cup	1 cup
Cheese	$1 \frac{1}{2}$ cups		
Pepperoni	$\frac{1}{3}$ cup		
Ham	$\frac{1}{2}$ cup		
Mushrooms	$\frac{2}{5}$ cup		
Pineapple	$\frac{1}{4}$ cup		
Green peppers	$\frac{1}{4}$ cup		
Tomatoes	$\frac{2}{6}$ cup		

Oh no! You ran out of cheese! You need 1 cup and you only have $\frac{4}{6}$ of a cup. How much more cheese do you need?



TASK #11 WHO ATE MORE?

First you serve 5 tables for lunch. Fill in the chart to show how much of their pizza is left.

Table Number	Amount of Pizza Eaten	Amount of Pizza Left
Table #1	$\frac{8}{10}$	$\frac{2}{10}$
Table #2	$\frac{3}{10}$	
Table #3	$\frac{6}{10}$	
Table #4	$\frac{7}{10}$	
Table #5	$\frac{9}{10}$	

Use the chart to answer the questions:
Which table ate the most pizza?
Which table ate the least pizza?

Now you're serving 4 more tables! All of the tables order a large pizza, but 2 tables want their pizza cut into 6 pieces instead of 12. The chart below shows the amount that each table ate.

Table Number	Amount of Pizza Eaten	Amount of Pizza Left
Table #1	$\frac{3}{6}$	
Table #2	$\frac{4}{12}$	
Table #3	$\frac{4}{6}$	
Table #4	$\frac{8}{12}$	

Circle three of the fractions in the chart. Write each one in word form.

Which table ate the most pizza?

Who ate more pizza - Table #2 or Table #3? How do you know? Use the number lines to prove it.

Which two tables ate the same amount of pizza? Use the diagrams to help you show your work.

TASK #12 A PIECE AT A TIME

You've set up a pizza stand on the street outside your restaurant for the street festival. How much pizza will you sell?

So far 5 people have bought pieces of a small pepperoni pizza. Here are the fractions of a pizza that each person bought.

$\frac{2}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$

How much pizza has been purchased so far? Show the total on the diagrams.

Circle the fraction below that represents one full pizza. Then represent a full pizza on the number line.

$\frac{3}{6}$ $\frac{6}{6}$ $\frac{5}{6}$

Your pizza stand continues to be busy all day! At the end of the day, here is what you have left. Write each amount as a fraction in numbers and in words.

FRACTION AS A NUMBER: FRACTION IN WORDS

Decompose, compare and order, and compare using number lines.

TASK #13 CUSTOMER SERVICE COMES FIRST!

In any business it's important to keep our customers happy! Let's solve some customer problems!

A customer comes in today and says, "I just want to the pizza place across the street and their pizza is way cheaper than yours! It's \$4 for $\frac{1}{8}$ of a pizza at your restaurant and only \$3 for $\frac{1}{8}$ of a pizza at the place across the street!" You decide to investigate. You find that your pizza IS more expensive, but there's more to the story! Take a look at the pictures.

Is $\frac{1}{8}$ of a pizza the same at both restaurants? What will you say to this customer?

One of your customers just came in to grab his re pizza. But on the way out he drops the box! "Oh no pizza on the floor!" You don't waste any time repl comes in every Sunday and you want to treat him him?

The phone rings. It's another order! "Hello, I'd like person will be eating $\frac{3}{8}$ of a small pizza. I'd also lik recommend for this customer?"

TASK #14 MORE OR LESS?

When you work at a pizza place it's important to understand how big each piece is depending on how the pizza is cut.

Which is more? Circle the fraction that is more and prove it using the diagram.

$\frac{3}{6}$ $\frac{3}{8}$ $\frac{6}{8}$ $\frac{4}{8}$

Complete this sentence: When the numerator is the same, the bigger fraction is...

$\frac{1}{4}$ $\frac{1}{2}$ $\frac{1}{3}$ $\frac{3}{8}$ $\frac{4}{8}$ $\frac{5}{8}$

Complete this sentence: When the denominator is the same, the bigger fraction is...

$\frac{2}{4}$ $\frac{8}{8}$ $\frac{3}{4}$ $\frac{4}{4}$

Complete this sentence: When the denominator is the same, the bigger fraction is...

You have a customer on the phone ordering a pizza. She says, "Hello! I'd like a medium pizza please! I need $\frac{3}{8}$ cheese and $\frac{3}{8}$ ham."

"Ok," you reply, "so that's $\frac{1}{2}$ cheese and $\frac{1}{2}$ ham?"

"No," the customer responds, "I said $\frac{3}{8}$ cheese and $\frac{3}{8}$ ham."

"Let me explain," you begin.

Explain to the customer why you are right about her order. Use the diagrams to help you explain.

As you walk through the restaurant, a man at a table gets your attention. "Excuse me," he begins, "I asked for $\frac{1}{2}$ a cup of cheese on this pizza, but it still tastes too cheesy!" You ask the cook and she says, "Oh dear! I accidentally put on $\frac{3}{4}$ of a cup of cheese!" How much more cheese was added than what should have been added?

A customer comes in to order a large pizza. "Hello," she says, "I'd like a medium cheese pizza. But I don't want it cut in 10 pieces like you usually do. I'd like each piece to be twice the size that it usually is. If you do that, how many pieces will I get?" You decide to show her with a pen and paper. Use the diagram and write down what you will say to her:

This conversation has made you realize a set of equivalent fractions! What are they?

Represent "1" as a fraction.

Work with numerators, denominators, and number lines to compare.

THIS UNIT WAS A REAL HIT WITH MY GRADE 4 CLASS. STUDENTS WERE **TOTALLY ENGAGED**, EVEN THOSE WHO DON'T TYPICALLY LIKE MATH ALL THAT MUCH. WHAT A GREAT WAY OF PUTTING **REAL WORLD PERSPECTIVES** INTO MATH IN A RELATABLE WAY FOR STUDENTS. **THEY LOVED IT!** THANK YOU!

-ANDRIANA

Are you ready to take fractions to the next level for your students?

The second kind of specialty pizza is:

B_{3/4} **A**_{4/5} **K**_{3/5} **E**_{5/8} **D**_{2/6} **P**_{4/4} **O**_{1/6} **T**_{6/6} **A**_{4/5} **T**_{3/6} **O**_{1/6}

P_{4/4} **I**_{2/5} **Z**_{4/6} **Z**_{4/5} **W**_{3/4} **I**_{2/5} **T**_{1/6} **H**_{1/8} **A**_{4/5}

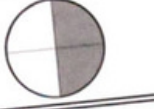






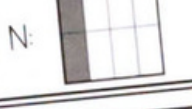










S_{1/3} **T**_{2/6} **U**_{1/5} **F**_{1/4} **F**_{1/4} **E**_{5/6} **D**_{2/6} **C**_{7/10} **R**_{3/6} **U**_{1/5} **S**_{1/3} **T**_{2/6}

Which of the specialty pizzas would you prefer? Draw what you think it would look like.

TASK #6 **A NEW SPECIALTY**

You've introduced two new types of specialty pizza to your restaurant! Let's find out what they are!

First of all, write the fraction that is represented for each letter.

A:  $\frac{4}{5}$	J:  $\frac{2}{4}$	S:  $\frac{1}{3}$
B:  $\frac{3}{3}$	K:  $\frac{3}{5}$	T:  $\frac{3}{6}$
C:  $\frac{7}{10}$	L:  $\frac{6}{8}$	U:  $\frac{1}{5}$
D:  $\frac{2}{6}$	M:  $\frac{1}{2}$	V:  $\frac{4}{8}$
E:  $\frac{5}{8}$	N:  $\frac{2}{8}$	W:  $\frac{3}{4}$
F:  $\frac{1}{4}$	O:  $\frac{1}{6}$	X:  $\frac{3}{10}$
G:  $\frac{9}{10}$	P:  $\frac{4}{4}$	Y:  $\frac{2}{3}$
H:  $\frac{1}{8}$	Q:  $\frac{5}{10}$	Z:  $\frac{4}{6}$
I:  $\frac{2}{5}$	R:  $\frac{5}{6}$	

©Shelley Gray www.ShelleyGrayTeaching.com