

MATH BUNDLE #3

Project Based Learning

2nd Grade
Print & Digital

Dinosaur Measurement

Project Based Learning

2nd Grade Math
Print & Digital

Which Tool?

In this exploration, we will practice using our measurement skills by measuring and comparing the heights of various dinosaurs. We will cut along to the approximate height of multiple dinosaurs based on available information. Our first step is to determine which is the best tool to use to measure each dinosaur's height.

Look at the dinosaur heights in the table below. Decide which tool would be the best choice for measuring the height of each dinosaur. Drag the correct measuring tool (ruler, yardstick, tape measure) into the boxes.

Dinosaur	Height	Tool
Triceratops	110	
Stegosaurus	100	
Brachiosaurus	150	
Tyrannosaurus	120	
Velociraptor	10	
Parasaurolophus	100	
Spinosaurus	150	
Coelacanth	10	

Explain how you will measure the Triceratops.

Pizza Fractions

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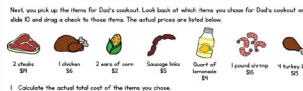


SUPERMARKET SPREE

Project Based Learning

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DAD'S COOKOUT ITEMS



1. Calculate the actual total cost of the items you choose.
2. Remember that Dad had a budget of \$25. Do your items still fit within that budget? Explain.
3. If necessary, make any changes to your item choices to make sure your total is less than \$25, or add any extra items to get closer to the budget. Explain any changes you make here.
4. You had \$25 set aside for Dad's cookout. How much of that money will be left over after buying these items?

SETTING THE BUDGET

Before you leave for the store, your mom gives you the money to buy the groceries. She gives you a number of bills and coins below. Calculate how much money you have to spend at the supermarket. Write the amount under each bill and coin type.



money you have. Show your work below.

supermarket shopping trip is



Dinosaur Measurement

Project Based Learning

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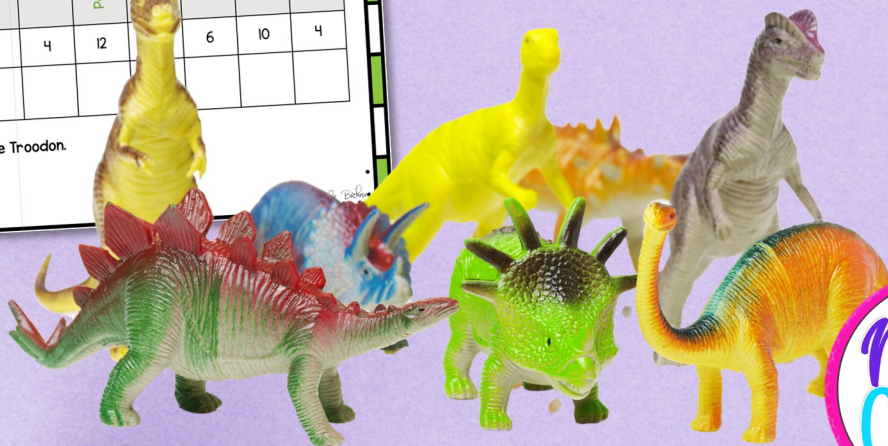
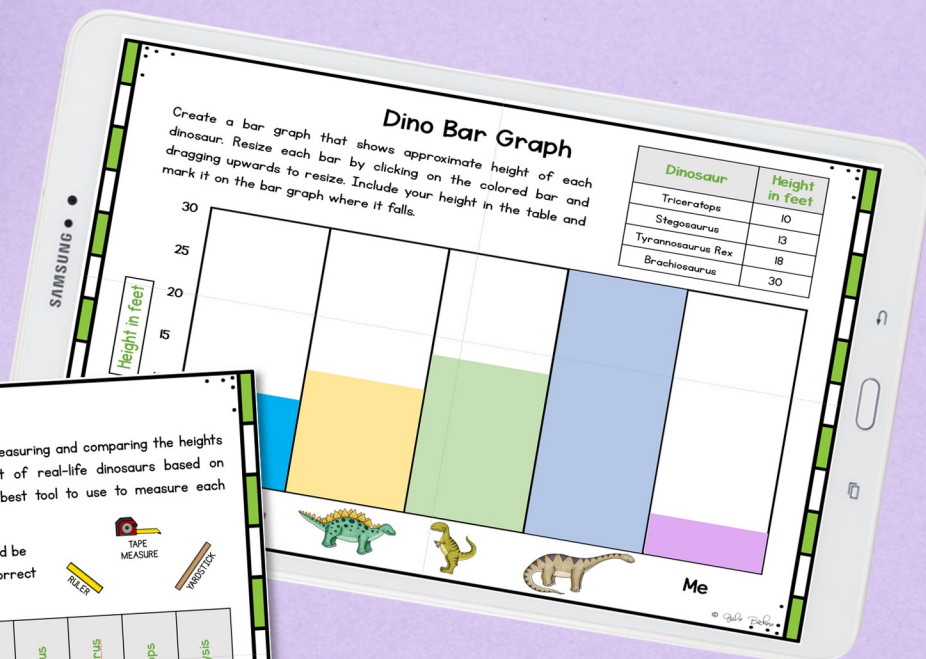
Which Tool?

In this exploration, we will practice using our measurement skills by measuring and comparing the heights of various dinosaurs. We will cut string to the approximate height of real-life dinosaurs based on scientists' estimations. Our first step is to determine which is the best tool to use to measure each dinosaur's height.

Look at the dinosaur heights in the table below. Decide which tool would be the best choice for measuring the height of each dinosaur. Drag the correct measuring tool (ruler, yardstick, tape measure) into the boxes.

Dinosaur	Velociraptor	Gallimimus	Brachiosaurus	Tyrasaurus	Tyrannosaurus Rex	Troodon	Parasaurolophus	Iggyasaurus	Diaphosaurus	Triceratops	Coelophysis
Height in feet	1 1/2	9	30	13	18	4	12	6	10	4	
Which Tool?											

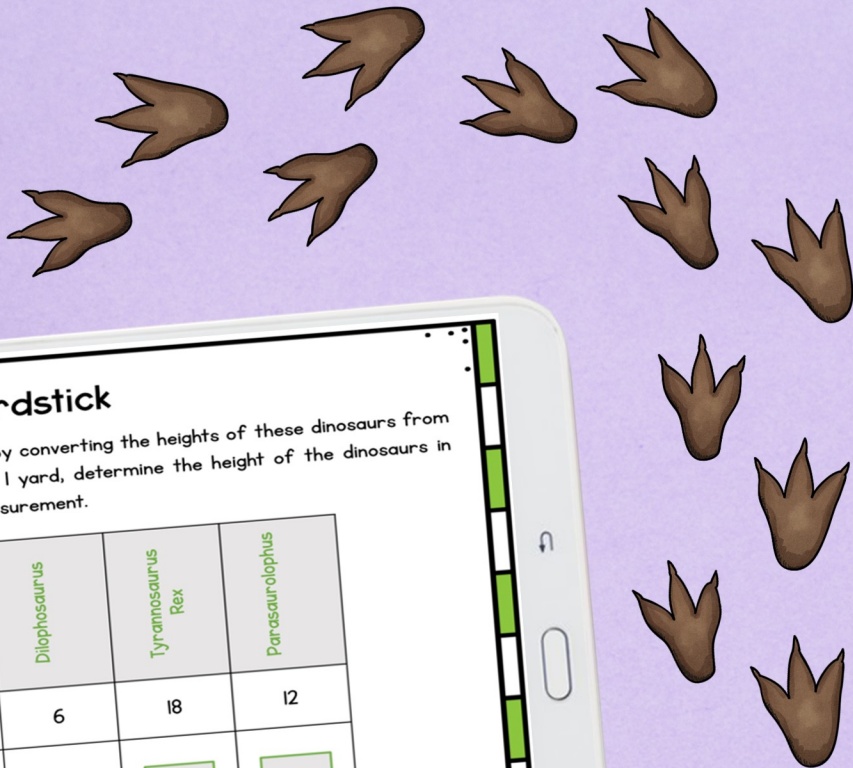
Explain how you will measure the Troodon.



Standards Addressed:

- 2.MD.A.1 Measure the length of an object by selecting and using appropriate tools.
- 2.MD.A.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describing how the two measurements relate to the size of the unit chosen.
- 2.MD.A.3 Estimate lengths.
- 2.MD.A.4 Measure to determine how much longer one object is than another.
- 2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units.
- 2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram.
- 2.MD.D.9 Generate measurement data by measuring lengths of several objects. Show measurements on a line plot.
- 2.MD.D.10 Draw a picture graph and bar graph to represent data.

Print & Digital Versions



Using a Yardstick

Next, we will continue practicing our measurement skills by converting the heights of these dinosaurs from feet to yards. Since we know that there are 3 feet in 1 yard, determine the height of the dinosaurs in yards. Use a ruler and a yardstick to compare each measurement.

Dinosaur	Gallimimus	Brachiosaurus	Dilophosaurus	Tyrannosaurus Rex	Parasaurolophus
Height in feet	9	30	6	18	12
Number of yards					

How many inches tall is the Velociraptor? E

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Dinosaur	Gallimimus	Brachiosaurus	Dilophosaurus	Tyrannosaurus Rex	Parasaurolophus
Height in feet	9	30	6	18	12
Number of yards					

How many inches tall is the Velociraptor? Draw a model that shows your thinking.



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Interactive Movable Pieces



Dino Line Plot

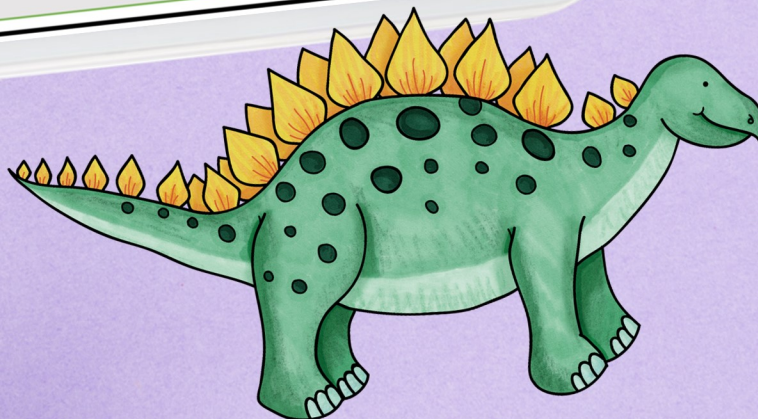
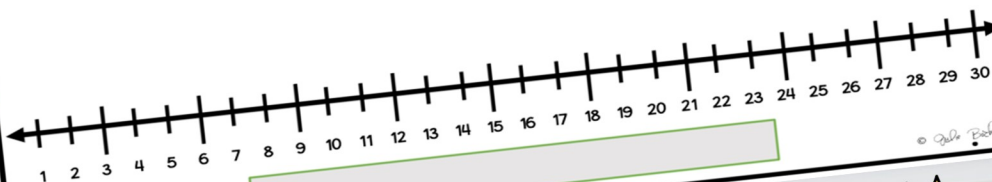


Drag to plot

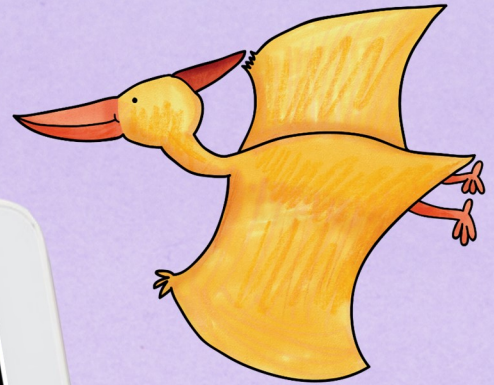


Create a line plot that shows the dinosaur heights using the data in the table. Mark each height by dragging an X above the correct number on the line. Label the X-axis.

Dinosaur	Height in feet
Velociraptor	1 ½
Troodon	4
Coelophysis	4
Dilophosaurus	6
Gallimimus	9
Triceratops	10
Parasaurolophus	12
Stegosaurus	13
Tylosaurus	13
Tyrannosaurus Rex	18
Brachiosaurus	30



Explores Measurement & Data



Let's Measure!

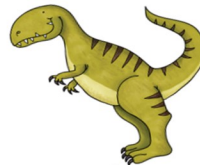
Materials

- String or Yarn...lots of it!
- Scissors
- Tape
- Marker
- You
- LARGE workspace to lay the measurements out. (Big empty room or pavement outside.)
- The measurement tools you selected on the previous slide (ruler, yardstick, tape measure)

Let's see how large these dinosaurs were in real life!

1. Using the tool you selected, measure lengths of string the same length as each dinosaur.
2. Label each string with the name of the dinosaur with marker on a piece of tape.
3. Order the string sizes from shortest to longest. You may need to tape down each end of the string.
4. With a friend's help, measure your own height to the nearest inch.
5. Cut a string to your height. Add your string where it falls in the order of dinosaur heights.

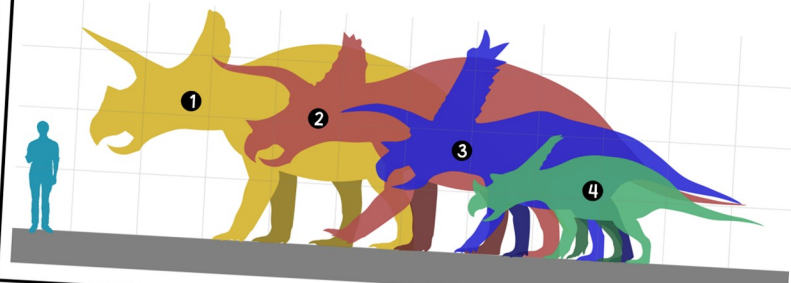
My Height is:



Dino Estimation

Look at this diagram of dinosaur heights. If the man in the diagram is about six feet tall, estimate the height in feet of each dinosaur group. Be sure to ask yourself, "Is my estimation reasonable?"

- 1 Eotriceratops = _____
- 2 Triceratops = _____
- 3 Pentaceratops = _____
- 4 Chasmosaurus = _____



Challenge Activities



Challenge 1 → More Dino Word Problems



Imagine walking along the beach with your parents and finding a 220-million-year-old fossil of a dinosaur footprint. That is just what happened to 4-year-old Lily Wilder in January 2021. The footprint she found is only four inches long. It will be placed in the National Museum with Lily's name printed right next to it!

Scientists believe that for every inch a dinosaur track is from heel to toe, it is equal to 12 inches in height of that dinosaur. That means if a dinosaur was 12 inches tall, its footprint would have been about 1 inch long.

1. The dinosaur footprint that Lily Wilder found is 4 inches long. About how tall was the dinosaur? Show your answer with a bar model or bar diagram using the shape tool .

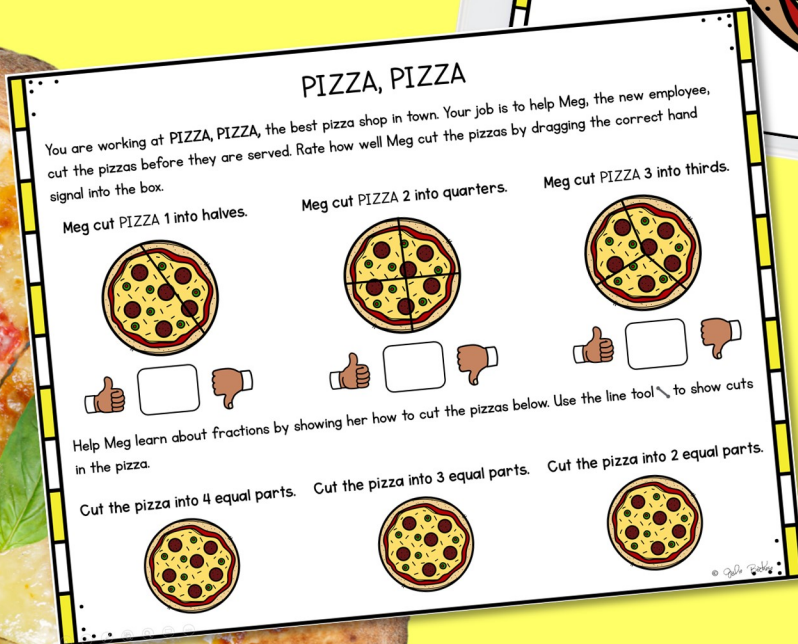
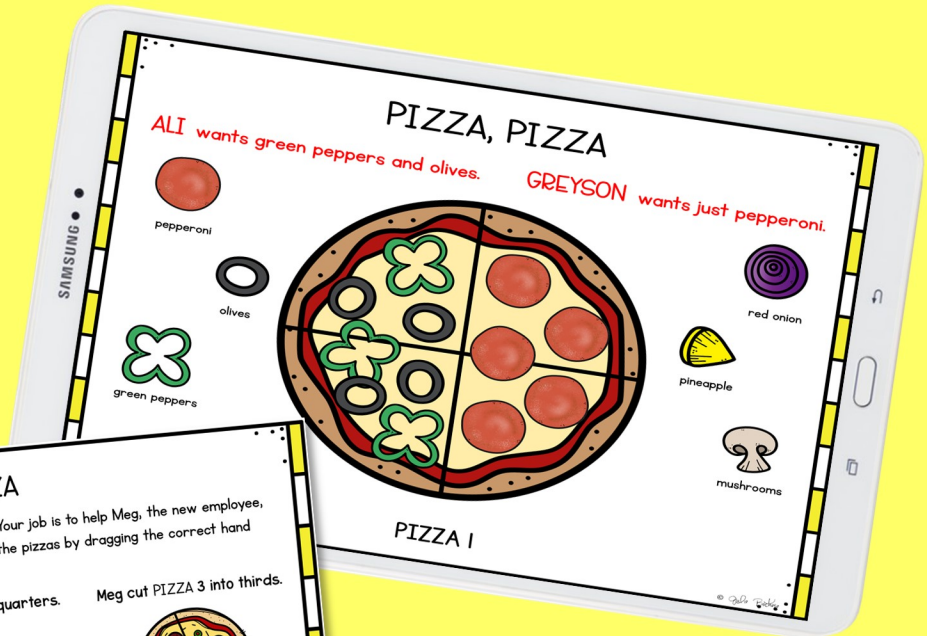
2. Measure your foot (without shoes) to the nearest inch. If you were a dinosaur, about how tall would you be? Use the shape tool  to draw a model to show your thinking.



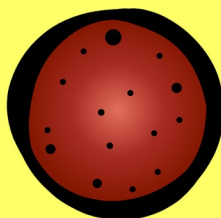
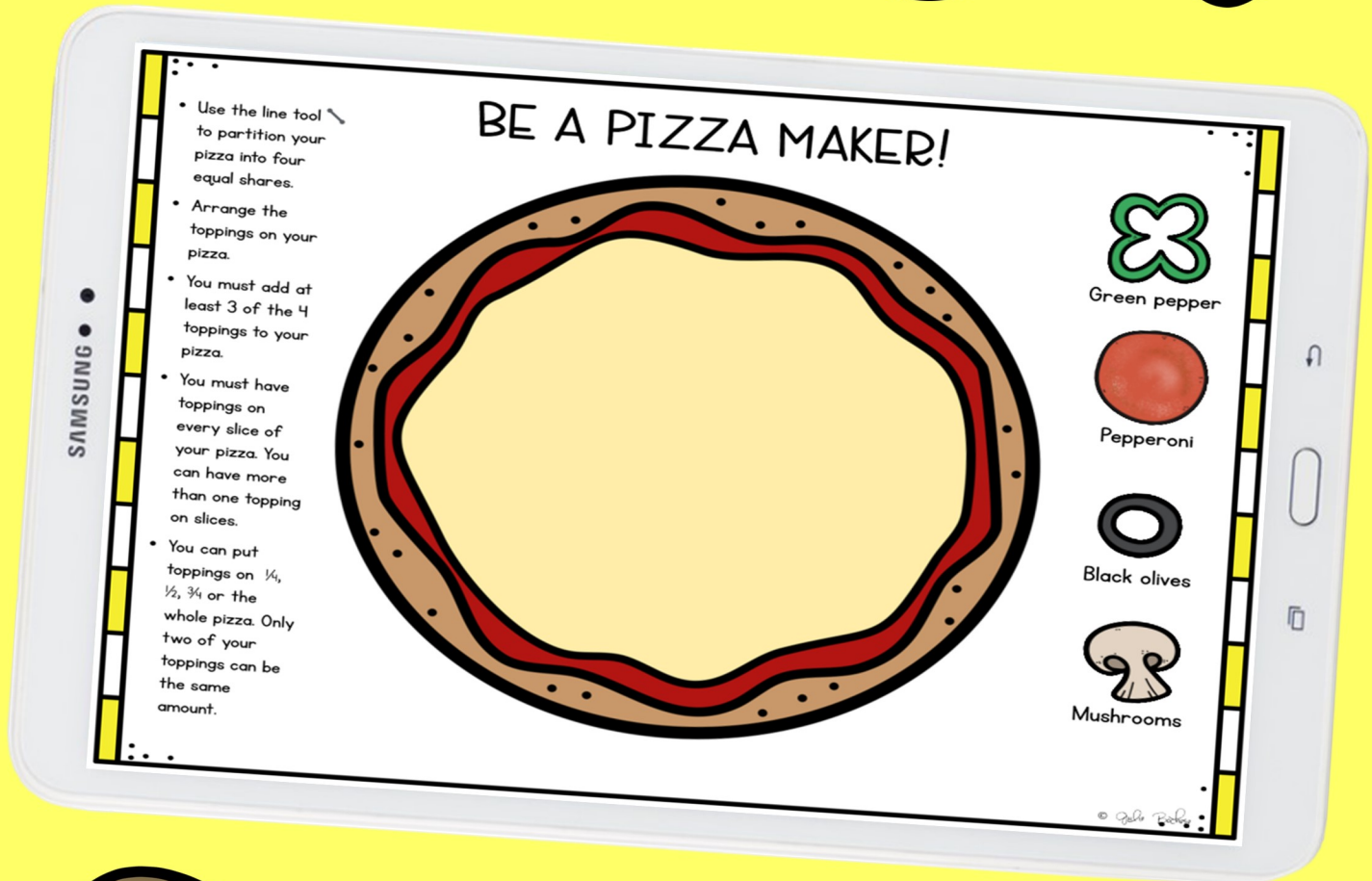
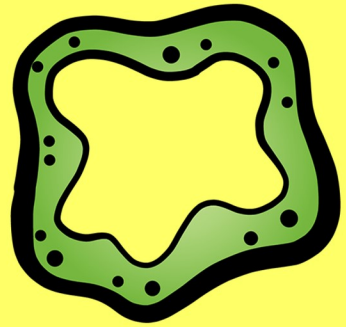
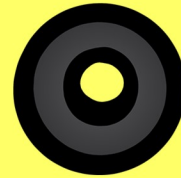
Pizza Fractions

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2nd Grade Math
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Interactive Movable Pieces



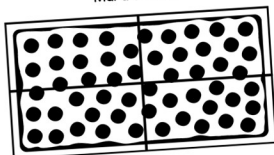
Explores Fractions & Partitioning



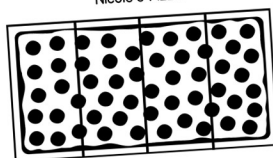
MAKE THE CUT!

Your friends, Mara and Nicole, come into the pizza shop and order individual pizzas. They ask for their pizzas to be cut into quarters. This is how you cut their pizzas.

Mara's Pizza



Nicole's Pizza



1. Nicole asks you why her pieces are smaller. Answer Nicole's question.
2. Mara eats 3 pieces of her pizza. Write a fraction that shows how much pizza is left.
3. Nicole eats two pieces of her pizza. Write the amount she has eaten as a fraction in two different ways.

BE A PIZZA MAKER!

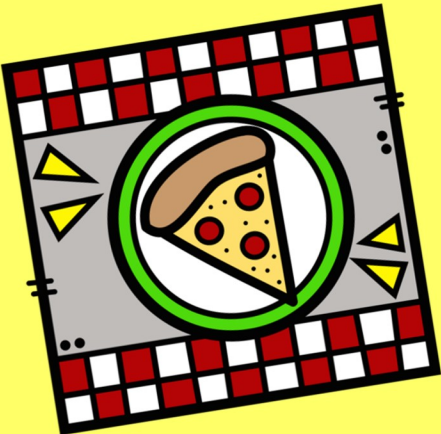
Complete the table and answer the questions below.

TOPPING	Is on _____ out of 4 pieces	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 or more toppings.
4. How many of your slices have 3 or more toppings?
5. Write the fraction that shows the number of slices with 3 or more toppings.



Challenge Activities



Take a class poll on everyone's favorite pizza toppings. Drag to tally the number of students who vote for each topping below. Create a bar graph using the data collected. To complete the bar graph, mark the squares by clicking on the colored blocks and dragging to resize.

CHALLENGE 1 (OPTION 2)

pepperoni		olives	
meatballs		tomatoes	
bacon		mushrooms	
onions			

Drag to tally
|

TOPPINGS	1	2	3	4	5	6	7	8	9	10
pepperoni										
meatballs										
bacon										
onions										
olives										
tomatoes										
mushrooms										

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Student Self-Assessment



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.



Pizza, Pizza

SELF REFLECTION RUBRIC: In each row, choose one statement that expresses how you would rate yourself on this math project. Click on the box and outline it using the border tool and choosing a color.

		
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.



SUPERMARKET SPREE

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SETTING THE BUDGET

Before you leave for the store, your mom gives you the money to buy the groceries. She gives you and number of bills and coins below. Calculate how much money you have to spend at the supermarket. Write the amount under each bill and coin type.



3 - \$20 bills



2 - \$10 bills



3 - \$5 bills



4 - \$1 bills



2 quarters



3 dimes



2 nickels

DAD'S COOKOUT ITEMS

Next, you pick up the items for Dad's cookout. Look back at which items you chose for Dad's cookout on slide 10 and drag a check to those items. The actual prices are listed below.



2 steaks
\$19



1 chicken
\$6



2 ears of corn
\$2



Sausage links
\$5



Quart of
lemonade
\$4



1 pound shrimp
\$16



4 turkey legs
\$15

1. Calculate the actual total cost of the items you chose.
2. Remember that Dad had a budget of \$25. Do your items still fit within that budget? Explain.
3. If necessary, make any changes to your item choices to make sure your total is less than \$25, or add any extra items to get closer to the budget. Explain any changes you made here.
4. You had \$25 set aside for Dad's cookout. How much of that money will be left over after buying these items?

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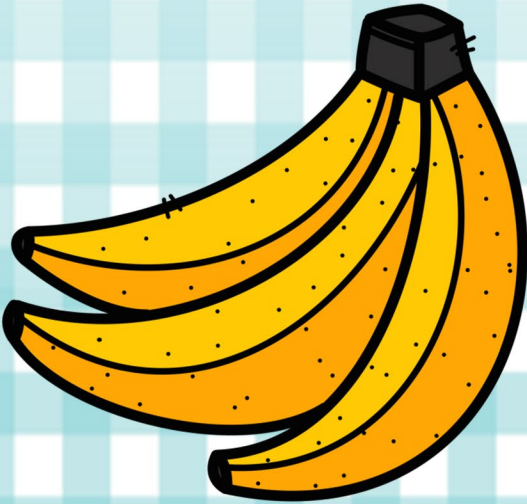
y supermarket shopping trip is



Standards Addressed:

- 2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems.
- 2.MD.C.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.
- 2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s.
- 2.NBT.B.5 Fluently add and subtract within 100.
- 2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

Print & Digital Versions



GRANDMA'S RECIPE

Your grandmother needs the ingredients to make a loaf of her special banana bread. She gave you the recipe card so that you can be sure to purchase all the necessary ingredients. Read the recipe card and highlight all the ingredients you need to purchase.

Grandma's special banana bread

Ingredients

- 3 ripe bananas, mashed
- ½ cup sugar
- 1 egg
- ¼ cup melted butter
- 1½ cups flour
- 1 tsp. salt

Directions

- Preheat oven to 325 degrees.
- Put all ingredients into a large bowl. Mix well.
- Pour batter into greased loaf pan.
- Bake 1 hour.



Now, complete the table with the items you will need to purchase for Grandma. Estimate the price of each item. Then, find the total estimate.

Item	My Estimate
	\$ _____
	\$ _____
	\$ _____
	\$ _____
	\$ _____
	\$ _____
	\$ _____
TOTAL	\$ _____

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Drag to highlight

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Item	My Estimate
	\$ _____
	\$ _____
	\$ _____
	\$ _____
	\$ _____
	\$ _____
	\$ _____
TOTAL	\$ _____

Explores Various Standards-Based Skills



BUDGET CHECK #1

It's important that you keep track of the budget to make sure you have enough money to buy all the items. In the table below, fill in your estimate for Mom's groceries from the previous page. Calculate how much money you estimate you will have left after getting Mom's items.

Person's Groceries	Estimated Cost	Estimated Total Cost
Mom		
Grandma		
Dad		
Julia		

Final Am



DAD'S COOKOUT

Your dad is having your Uncle Ricky over tomorrow for a cookout. He needs you to pick up some items for him to barbecue, but he doesn't want to spend more than \$25 on all the ingredients. Below are a list of some items Dad could use for his cookout and what you estimate they might cost. Drag checkmarks to the items you are going to get for Dad. Remember: you need enough food for Dad and Uncle Ricky to have for dinner, but you can't spend more than \$25.



2 steaks
\$18



1 chicken
\$8



2 ears of corn
\$3



Sausage links
\$6



Quart of
lemonade
\$2



1 pound shrimp
\$14



4 turkey legs
\$16

Now, complete the table with the items you will purchase for Dad and the estimated prices from above. You might not use all spaces in the table. Calculate the total estimated cost.

Item	My Estimate
	\$
	\$
	\$
	\$
	\$
TOTAL	\$

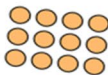
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Challenge Activities

CHALLENGE #3: CHECKING OUT

Solve the problems about arrays below.

1. The customer in front of you has placed all their groceries on the conveyor belt at the register. Their items are arranged in the array shown below. How many items are they purchasing? Solve with an addition equation.



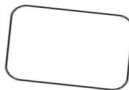
2. You have 25 total items in your cart. You want to place them onto the conveyor belt in 5 equal rows. Drag the dots to create an array that shows how you may arrange your items.

Drag me

3. After the cashier has scanned your items, you arrange them so you can place them in the bags. Each bag specifies how many items will fit inside. Drag the dots to create arrays of the items that will go inside each bag.



6 items



9 items



10 items



Drag me

CHALLENGE #2: PICKING

In the checkout line, you find an extra \$5 bill in your pocket that you had forgotten about! You decide to use this money to buy yourself a treat for a job well done. The table below shows the prices of some goodies in the checkout aisle.

Treat	Chips	Candy Bar	Gummy Bears	Jerky	Mints	Fruit Snacks
Price	\$1.45	\$1.30	\$2.05	95¢	\$1.05	\$1.55

- If you bought gummy bears and a candy bar, how much would it cost? How much change would you receive?
- What combination of treats could you purchase that would cost exactly \$5 all together?
- Which treats do you choose to buy? You can buy as many or as few as you would like, but your total must not be more than \$5. How much do your treats cost?
- How much change will you receive after paying for your treats with a \$5 bill?



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Engaging & Interdisciplinary



DRIED GOODS

Your next stop is the section of the supermarket with dried goods- items that won't perish (like fruits and veggies do) and don't need to be kept cold. The table below shows the items you need in this section.

Item	 Loaf of Bread	 Jar of Peanut Butter	 Bag of Sugar	 Bag of Flour	 Canister of Salt
Cost					

1. You have a coupon for \$1.50 off a loaf of bread. The bread usually costs \$3.50. How much does it cost now? Fill in the table with the price.
2. There are two choices for peanut butter: Peanutty! brand peanut butter for \$6 or the store brand for \$4. Choose one and write the price in the table.
3. There is a sale on baking ingredients. If you buy a bag of sugar and a bag of flour, you get \$1 off of each. The sugar usually costs \$4, and the flour usually costs \$3. Fill in the table with the sale prices.
4. There is an error on the price sign for the salt. Instead of showing the price in dollars and cents, it says that the price is 5 quarters, 4 dimes, 3 nickels, and 20 pennies. Fill in the table with the price.
5. How much will the dried goods cost in total?