ICECREAM TRUCK MANIA
Project Based Learning
4th Grade Print & Google Slides

CHALLENGE #1: ICE CREAM SIZES

Use the line plot you made on the previous page to answer the questions below.

1. How much taller is the tallest ice cream than the shortest...

CHALLENGE #1: ICE CREAM SIZES

Sometimes, customers are very hungry and want a large ice cream. Other customers aren't very hungry and only want a small treat. You try to appeal to every appetite by having all different sized frozen treats. The table below shows the height of each type of ice cream. Fill in the missing labels on the line plot. Then, draw Xs to plot the ice cream height data on the line plot.

Ice Cream Type	Strawberry soft serve	Tropical fruit popsicle	Blueberry popsicle	Chocolate mini cone	Rainbow scoop stack	Chocolate sprinkle cone	Patrio...	...nge ...msicle	Jumbo lime pop
Height in Inches	$6\frac{3}{4}$	$7\frac{1}{2}$	$7\frac{1}{4}$	$6\frac{1}{4}$	$9\frac{1}{4}$	$7\frac{3}{4}$		$6\frac{3}{4}$	$8\frac{1}{2}$

ICE CREAM SUPPLY

You want to feature more flavors and types of treats in your menu. Below are new types of ice cream you can order to stock your truck. You want to order exactly 1,500 new treats. Determine how many of each type you would like and fill in the space in the table. Keep track of how many you have ordered to be sure you reach exactly 1,500.

Ice Cream Type	Number Ordered	Running Total of Treats Ordered
Green apple popsicle		
Rainbow scoop stack		
Very berry soft serve swirl		

ICE CREAM SUPPLY

Your first step is to determine how many of each menu item you have in the freezer of your ice cream truck. You are given a pattern for each frozen treat. Solve for the missing number in the pattern to find the quantity of that frozen treat you have.

12, 27, 42, __57__, 72, 87

1, 2, 4, 8, __16__, 32

243, 81, 27, 9, 3, __1__

- Realistic learning situations
- Print & Go, Low Prep

MEASURING ICE CREAM

The table below shows the mass in grams of some of the frozen treats you sell from your ice cream truck. Use the information to answer the questions below.

Ice Cream Type	Chocolate sprinkle cone	Blue raspberry popsicle	Soft serve swirl cone	Pistachio cone	Patriotic pop
Mass (in grams)	390	124	486	335	80

1. Jeannette buys a pistachio cone. She takes a big bite, and her ice cream now weights 308 grams. How many grams was the bite Jeannette took?

   27 grams

2. Mr. Petrakis buys a chocolate sprinkle cone, a blue raspberry popsicle, and a soft serve swirl cone. What is the total mass of the ice creams in grams? What is the total mass of the ice creams in kilograms?

MEASURING ICE CREAM

As a special promotion, you are selling mega-sized ice creams from your ice cream truck. Compare the masses of the mega ice creams by filling in the correct symbol (<, >, or =) in each comparison below.

Supersized Strawberry Sprinkle Pop > Extra Large Lemon Cone

Mega Mint Swirl > Gla... ...rry ...sicle

5

Meaningful practice of 4th grade math skills.

MEASURING ICE CREAM

You install a new soft serve machine in your ice cream truck. The table below shows how many liters of each soft serve ice cream flavor were sold this month. Use the information to answer the questions.

Flavor	Vanilla	Chocolate	Strawberry	Swirl	Very Berry	Minty
Volume Sold (liters)	48	28	35	32	18	

1. There are 1,000 milliliters in a liter. How many milliliters of vanilla and swirl soft serve were sold total?

   80,000 milliliters

2. How many more milliliters of chocolate and minty mix soft serve were sold than very berry and strawberry?

   2,000 milliliters

3. The truck sold the same amount of soft serve each week this month. If there were 4 weeks this month, how many liters of soft serve were sold each week?

   47 liters

4. The soft serve machine only holds 3,000 milliliters of each flavor at a time. How many times did you need to fill the machine with minty mix this month?

Five customers order ice cream cones from the truck. However, instead of ordering them as usual, t... make ice cream cones that are a certain height! Draw any number of scoops on top of each cone to reach the desired height. Use the ruler to ensure that each cone is the correct height. Color your ice cream scoops and cones.

CHALLENGE #1: ICE CREAM SIZES

Sometimes, customers are very hungry and want a large ice cream. Other customers aren't very hungry and only want a small treat. You try to appeal to every appetite by having all different sized frozen treats. The table below shows the height of each type of ice cream. Fill in the missing labels on the line plot. Then, draw Xs to plot the ice cream height data on the line plot.

Ice Cream Type	Strawberry soft serve	Tropical fruit popsicle	Blueberry popsicle	Chocolate mini cone	Rainbow scoop stack	Chocolate sprinkle cone			
Height in Inches	$6\frac{3}{4}$	$7\frac{1}{?}$	$7\frac{1}{?}$						

CHALLENGE #1: ICE CREAM SIZES

Use the line plot you made on the previous page to answer the questions below.

1. How much taller is the tallest ice cream than the shortest ice cream?

3 inches

2. If you were to stack 4 chocolate sprinkle cones, one on top of another, how tall would it be?

31 inches tall

3. Jarrod has eaten the top 1 ½ inches of his patriotic pop. Meera has eaten the top ¾ of an inch of her ... popsicle. Who has more left of their popsicle?

... because she has 6 ½ in. left,

Challenge activities push students who are ready for a challenge.

ICE CREAM SUPPLY

You receive a large shipment from your ice cream supplier to stock your truck. The table below shows how many of each ice cream type you have right now. Use the information in the table to answer the questions.

Ice Cream Type	Chocolate sprinkle cone	Blue raspberry popsicle	Soft serve swirl cone	Pistachio cone	Patriotic pop
Number in Truck	585	490	320	256	168

1. You sell 26 soft serve swirl cones per day. You sell 10 pistachio cones per day. In how many days will you have the same amount of soft serve swirl cones left as pistachio cones?

2. You split the chocolate sprinkle cones and the blue raspberry popsicles evenly between 5 freezers in your truck. How many ice creams are in each freezer?

3. In one day, you sold 14 blue raspberry popsicles. You sold 8 times as many patriotic pops as blue raspberry popsicles. How many patriotic pops do you have left?

4. The chocolate sprinkle cones are your bestseller. Over the course of one year, you order 16 times as many chocolate sprinkle cones as you have now. How many do you order in total?

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- 4.OA.C.5 Generate a number or shape pattern that follows a given rule.

- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations.

- 4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.

- 4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.

- 4.NFA.2 Compare two fractions with different numerators and different denominators.

- 4.MD.A.1 Know relative sizes of measurement units within one system of units. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit.

- 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money.

- 4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit.

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FOR THE TEACHER

ICE CREAM TRUCK MANIA is a project-based learning task that uses fourth grade math standards to solve problems related to running an ice cream truck. It was created for students in fourth grade. The following standards are addressed:

- 4.OA.C.5 Generate a number or shape pattern that follows a given rule.

- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations.

- 4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.

- 4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.

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- 4.MD.A.1 Know relative sizes of measurement units within one system of units. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit.

- 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money.

- 4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit.

DIRECTIONS:

1. Assign students to work alone or in small groups.
2. Preview the activity with your students.
3. Allow students class time to complete the activity. This can span several days.
4. Allow students an opportunity to complete extra challenge activities (optional).
5. Allow students to complete the self-reflection and evaluation rubric.
6. Allow students an opportunity to share their completed projects.

ICE CREAM TRUCK MANIA

You have been hired to run an ice cream truck! It is your job to stock the ice cream truck with tasty treats, keep your ice cream truck running on-schedule, and serve delicious ice cream to the community!

Here are your tasks:

- Read through the entire packet before beginning.

- Determine how many of each ice cream treat you have in your truck.

- Keep track of your ice cream inventory as you make sales and receive new shipments.

- Place orders for new ice cream treats.

- Answer questions about the ice cream truck's stop schedule.

- Determine a new schedule for the ice cream truck.

- Measure and weigh ice cream portions.

- Compare masses of ice cream portions in fractions of a kilogram.

- Calculate volumes of soft serve ice cream sold.

- Interpret data about ice cream truck customers from picture and bar graphs.

- Plot data about ice cream truck customers on a bar graph.

- (Optional) Complete the challenge pages.

- Complete the self-reflection and evaluation rubric.

ICE CREAM SUPPLY

You receive a large shipment from your ice cream supplier to stock your truck. The table below shows how many of each ice cream type you have right now. Use the information in the table to answer the questions.

Ice Cream Type	Chocolate sprinkle cone	Blue raspberry popsicle	Soft serve swirl cone	Pistachio cone	Patriotic pop
Number in Truck	585	490	320	258	168

1. During a hot week in the summer you sell 103 blue raspberry popsicles. How many blue raspberry popsicles do you have left? Write an equation to show your thinking.

2. The patriotic pops come in boxes of 8. How many boxes do you have?

3. In one day, you sold 9 pistachio cones. You sold 6 times as many soft serve swirl cones as pistachio cones. How many soft serve swirl cones do you have left?

4. The chocolate sprinkle cones are your bestseller. The next time you place an order from your supplier, you want to order four times as many chocolate sprinkle cones as you have now. How many will you order?

ICE CREAM TRUCK STOP SCHEDULE

You decide to bring your ice cream truck to the neighboring town, Mapledale, on Saturdays between 10 am and 12 pm. Below is a map of Mapledale. Choose 4 new stops for your ice cream truck in Mapledale that you think will attract many customers. Label each stop on the map. On the table, create a schedule for the Mapledale stops. Keep in mind how much time you will need to spend at each stop and how long it will take you to travel from one stop to the next.

	School			Stop	Time	Time Elapsed Since Previous Stop
				#1		
	Cafe	Public Library	Community Pool	#2		
	Park		Houses	#3		
Grocery Store		Police Station	Hotel	#4		

MEASURING ICE CREAM

The table below shows the mass in grams of some of the frozen treats you sell from your ice cream truck. Use the information to answer the questions below.

| Ice Cream Type	Chocolate sprinkle cone	Blue raspberry popsicle	Soft serve swirl cone	Pistachio cone	Patriotic pop
Mass (in grams)	390	124	486	335	80

1. Jeannette buys a pistachio cone. She takes a big bite, and her ice cream now weights 308 grams. How many grams was the bite Jeannette took?

2. Mr. Petrakis buys a chocolate sprinkle cone, a blue raspberry popsicle, and a soft serve swirl cone. What is the total mass of the ice creams in grams? What is the total mass of the ice creams in kilograms?

3. Emilio buys two ice creams. The total mass of his ice creams is more than $\frac{1}{2}$ of a kilogram but less than $\frac{6}{10}$ of a kilogram. Which two ice creams could Emilio have purchased?

4. Charlotte, Carolina, and Emily are sharing a soft serve swirl cone. If they each eat the same amount of ice cream, how many grams will each girl eat?

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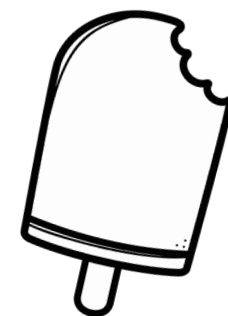
HUNGRY CUSTOMERS

The pictograph below shows how many people purchased ice cream from the truck at each stop today. Use the data in the pictograph to answer the questions.

NUMBER OF CUSTOMERS PER STOP

Highland Street	🍦🍦🍦
Poplar Drive	🍦🍦🍦🍦🍦🍦
James Avenue	🍦🍦🍦🍦🍦
Oak Circle	🍦🍦🍦🍦
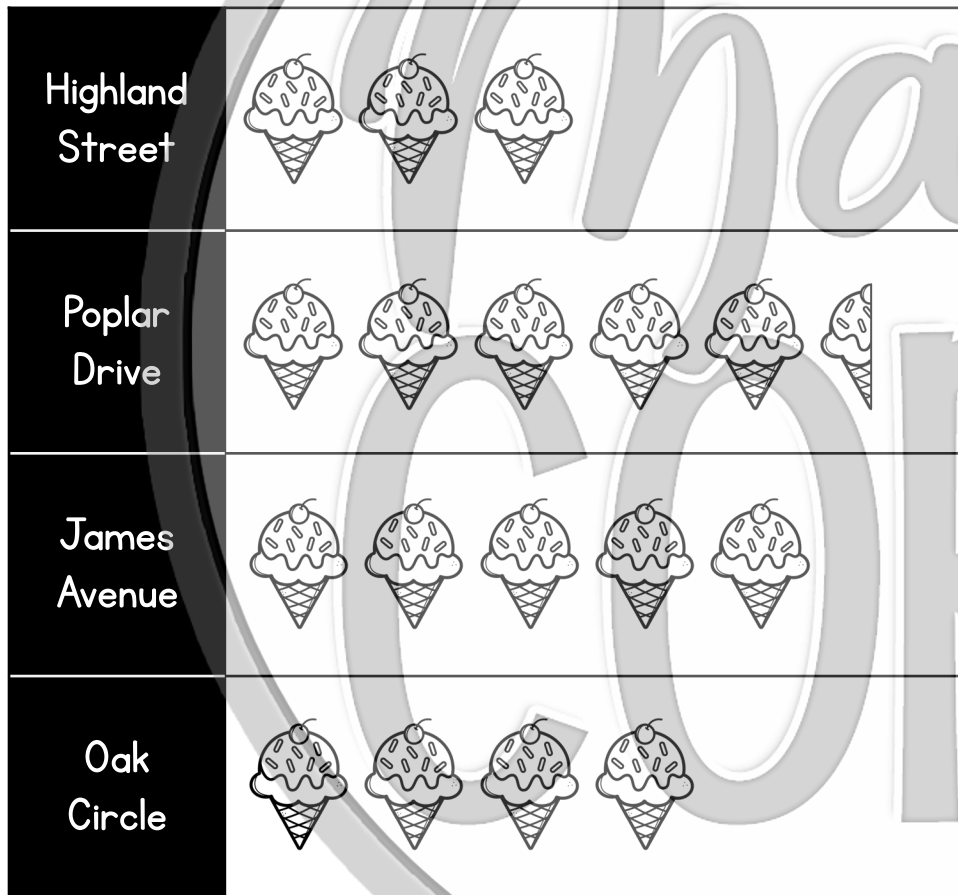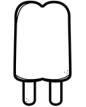
🍦 = 4 customers

1. How many more people purchased ice cream at Poplar Drive than Highland Street?

2. Of the customers at the James Avenue stop, there was an equal number of adults and children. Of the children, 3 were boys, and the rest were girls. How many girls bought ice cream at James Avenue?

3. There were three times as many customers at the Fieldstone Lane stop as at the Oak Circle stop. How many people bought ice cream at Fieldstone Lane?

4. How many customers bought ice cream from all the stops listed on the pictograph together?

CHALLENGE #1: ICE CREAM SIZES

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Ice Cream Type	Strawberry soft serve	Tropical fruit popsicle	Blueberry popsicle	Chocolate mini cone	Rainbow scoop stack	Chocolate sprinkle cone	Patriotic pop	Orange creamsicle	Jumbo lime pop
Height in Inches	$6\frac{3}{4}$	$7\frac{1}{2}$	$7\frac{1}{4}$	$6\frac{1}{4}$	$9\frac{1}{4}$	$7\frac{3}{4}$	$7\frac{1}{2}$	$6\frac{3}{4}$	$8\frac{1}{2}$

6   6 ¼   6 ½   7   7 ¼   7 ¾   8   8 ¾   9 ¾   10
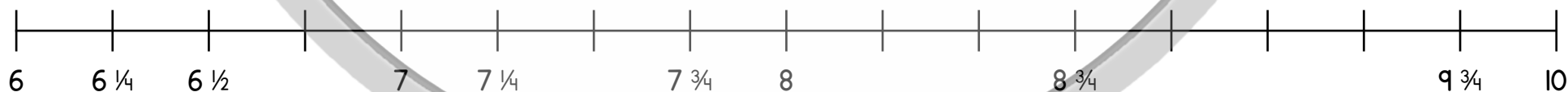
Ice Cream Heights (in Inches)

CHALLENGE #2: ICE CREAM FLAVORS

Your ice cream truck is such a success that you decide to create your own line of ice cream flavors. Answer the two-step word problems.

1. To produce one batch of ice cream, you need 22 gallons of cream and 3 times as many gallons of milk as cream. How much milk and cream do you need all together for one batch of ice cream?

2. In one week, you sell 45 containers of your most popular flavor, Georgia peach. You sold 5 times more containers of Georgia peach ice cream than birthday cake ice cream, and you sold 4 times more containers of strawberry frozen yogurt than birthday cake ice cream. How many containers of strawberry frozen yogurt did you sell?

3. You made 144 pints of chocolate marshmallow ice cream. Each container of ice cream you sell contains six pints. You sold half of the containers of chocolate marshmallow ice cream. How many containers are left?

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

Circle the statement you most agree with.

I am ready for something harder.   This was just right.   I found this very challenging.

SELF EVALUATION

Circle one box per row on the rubric that expresses how you rate yourself on this Project Based Learning Activity.

+	✓	−
I felt very confident about the math in this project.	I felt pretty good about my ability to complete the math in this project.	I felt a lot of the math in this project was too hard for me to do alone.
I understood all of the math and did not need help to complete the problems.	I understand most of the math but needed a little help to solve some of the problems.	I understood some of the math but needed help to complete most of the problems.
I easily used many strategies to solve the math problems efficiently.	I needed some help to use the best strategies for solving the math problems.	I had trouble understanding the best way to solve many of the math problems.
I feel I am ready for a harder math project.	I feel I would like to spend more time practicing similar math problems.	I feel I need assistance to work on similar math problems

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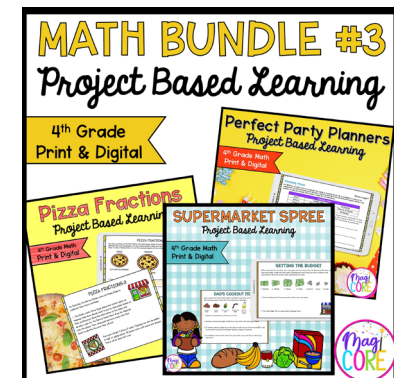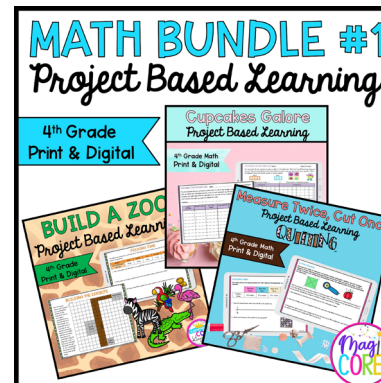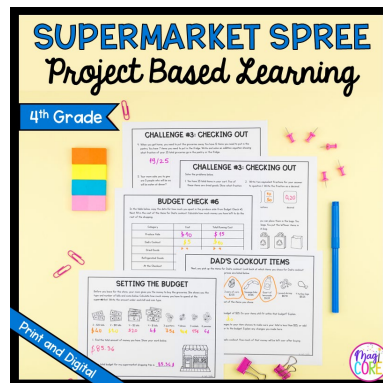
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