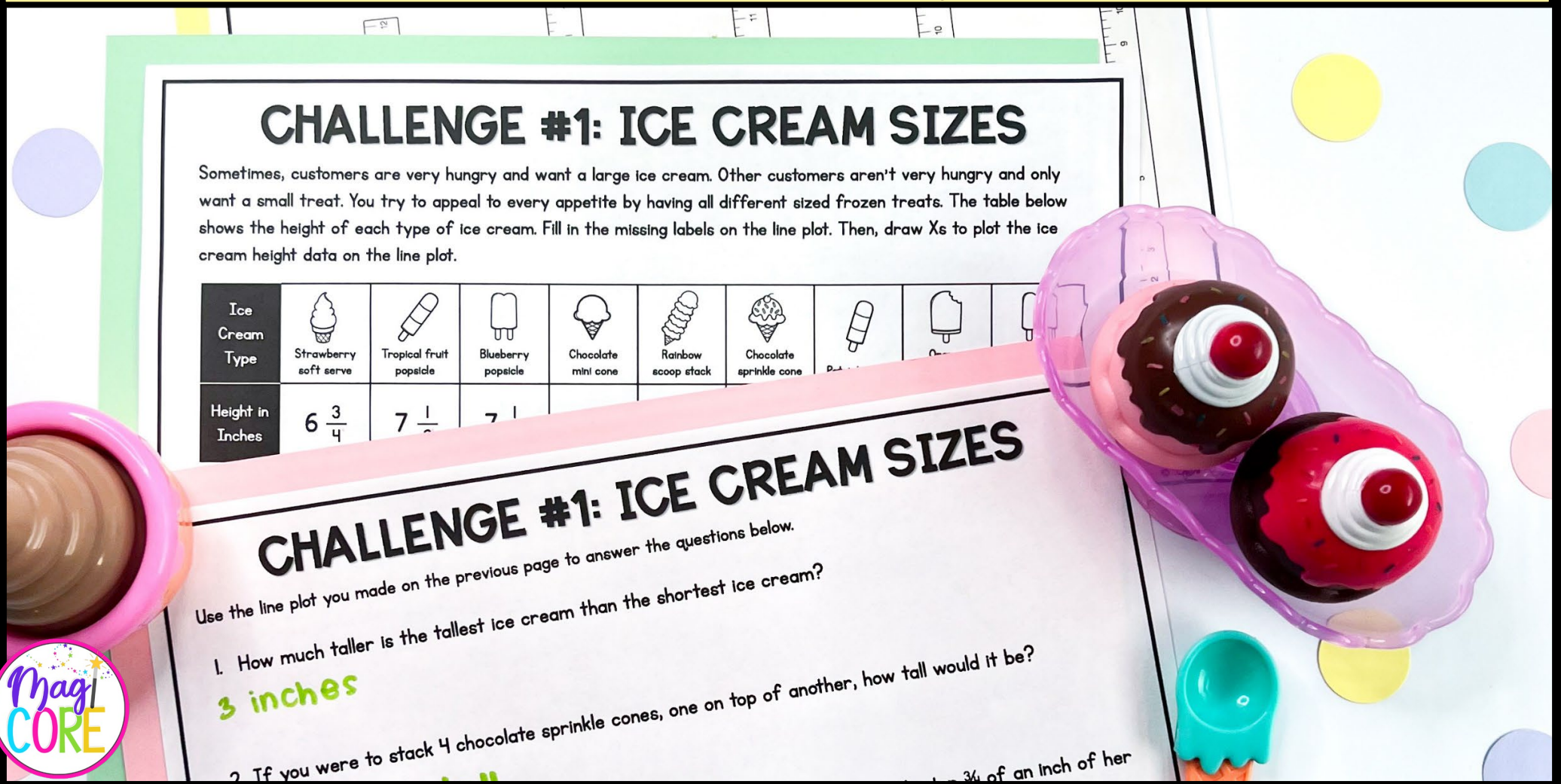
ICECREAM TRUCK MANIA

Project Based Learning

5th Grade Print & Google Slides



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

0.852 kilogram

>

Extra Large Lemon Cone

0.725 kilogram

Mega Mint Swirl

0.637 kilogram

<

Giant Cherry Popsicle

0.662 kilogram

Jumbo Double Lime Pop

0.7 kilogram

=

Rainbow Mountain Stack

0.700 kilogram

Big Blueberry Pie Cone

0.605 kilogram

>

Towering Tropical Fruit Popsicle

logram

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 Mix
Volume Sold	48	28	35	32	18	27

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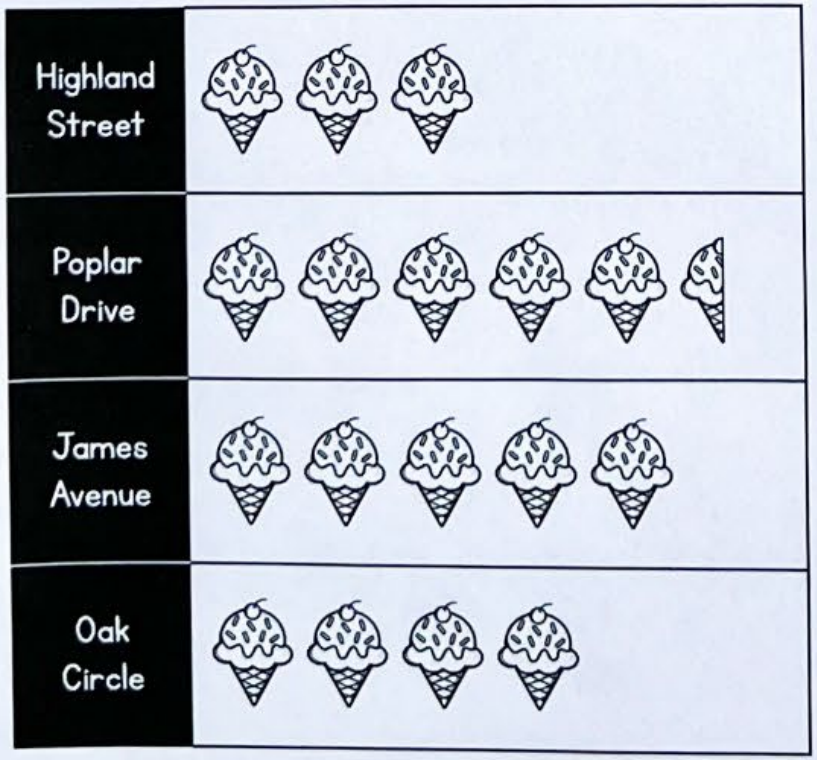
ate and minty mix soft serve

- Realistic learning situations
- Print & Go, Low Prep

HUNGRY CUSTOMERS

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

NUMBER OF CUSTOMERS PER STOP



= 42 customers

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

105 more customers

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

35 girls

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?

504 customers

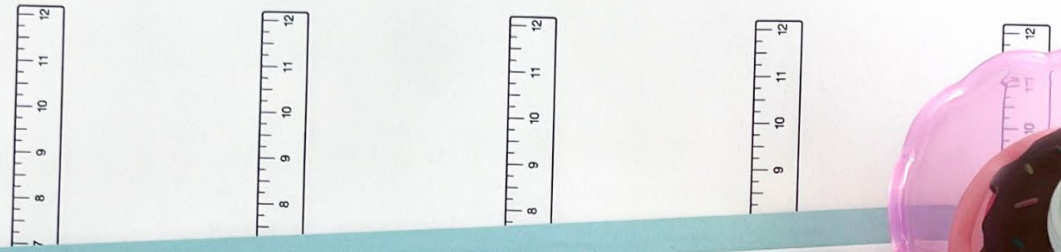
4. How many customers bought ice cream from all the stops listed on the pictograph together?

135 customers

Meaningful practice of 4th grade math skills.

CHALLENGE #1: ICE CREAM SIZES

Five customers order ice cream cones from the truck. However, instead of ordering them as usual, they ask you to 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

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

1. How much taller is the tallest ice cream [illegible]

2.

3. I

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	[illegible]msicle	Jumbo lime pop
Height in Inches	$6\frac{3}{4}$	$7\frac{1}{2}$	$7\frac{1}{4}$	$6\frac{1}{4}$	$9\frac{1}{4}$	$7\frac{3}{4}$		$6\frac{3}{4}$	$8\frac{1}{2}$

Promotes critical thinking and problem solving.

Five customers order ice cream cones from the truck. However, instead of ordering them as usual, they 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.

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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 1/2 in. left,

Challenge activities push students who are ready for a challenge.

Digital Version in Google Slides

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?

Standards Addressed:

- 5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.NBT.A.3.B Compare two decimals to thousandths based on meanings of the digits in each place.
- 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
- 5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers.
- 5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system.
- 5.MB.B.2 Make a line plot to display a data set of measurements in fractions of a unit.

FOR THE TEACHER

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

- 5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.NBT.A.3.B Compare two decimals to thousandths based on meanings of the digits in each place.
- 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
- 5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers.
- 5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system.
- 5.MB.B.2 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

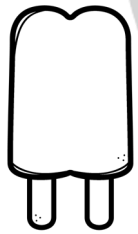
Your first step is to determine how many of each menu item you have in the freezer of your ice cream truck. You are given an equation for each frozen treat. Use order of operations to solve and find the quantity you have of that frozen treat.

$7 \times (32 - 25) =$ _____

$[(8 + 1) - 3] \times 5 =$ _____

$(5 + 3) \times (9 - 3) =$ _____

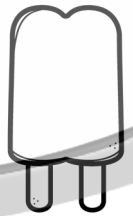
$\{4 + [2 \times (6 - 1)]\} =$ _____



$18 + [(3 \times 2) \times (9 + 1)] =$ _____

$(24 + 12) + (4 \times 4) - (2 \times 3) =$ ____

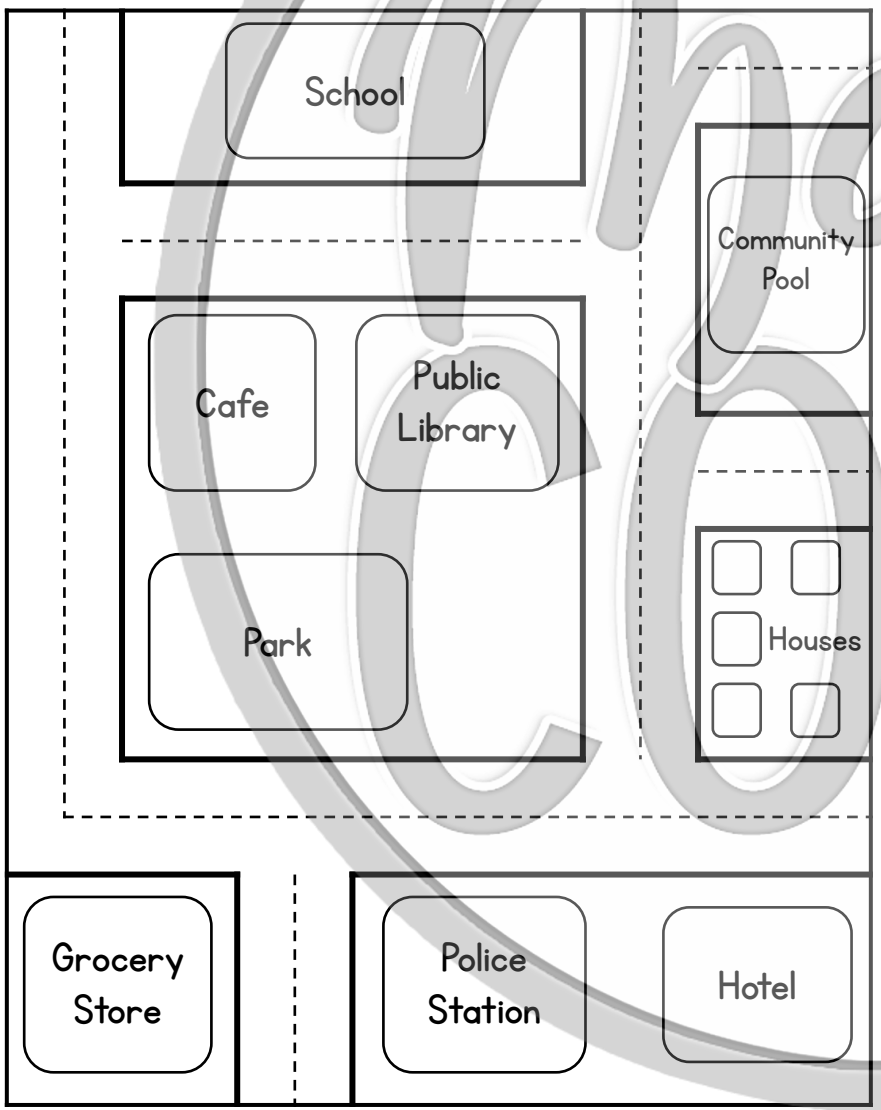
$\{3 \times [2 + (8 \times 3)]\} + 5 =$ _____



$[(5 \times 6) - (7 \times 2)] + (6 \times 8) =$ ____

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.



Stop	Time	Time Elapsed Since Previous Stop
#1		
#2		
#3		
#4		

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

0.852 kilogram

◯

Extra Large Lemon Cone

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Mega Mint Swirl

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Giant Cherry Popsicle

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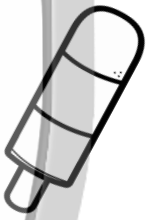


Towering Tropical Fruit Popsicle

0.550 kilogram

Super Sprinkle Vanilla Cone

0.482 kilogram

◯

Colossal Chocolate Cone

0.599 kilogram

Blue Raspberry Ultra Pop

0.623 kilogram

◯

Plentiful Pistachio Cone

0.838 kilogram

HUNGRY CUSTOMERS

Use the bar graph you made on the previous page to answer the questions below.

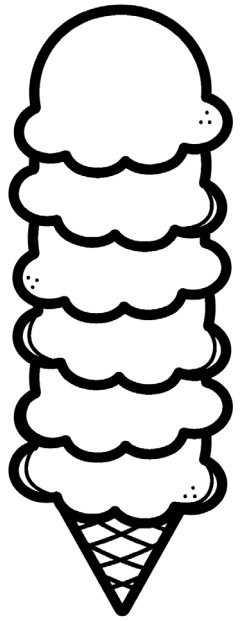
1. Which stops had more customers than the stop at Lake Court?

2. How many more people bought ice cream at Lake Court and Arbor Way than at Elmwood Drive and Bridge Street?

3. How many total customers purchased ice cream in Mapledale in July?

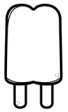
4. You estimate that each customer spent approximately $3.75 at your ice cream truck. According to this estimate, how much money did you earn in Mapledale in July?

5. If there are the same number of customers at Bridge Street each Saturday, and there were 4 Saturdays in the month of July, how many customers were at Bridge Street each Saturday?



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	 Patriotic pop	 Orange creamsicle	 Jumbo lime pop
Height in Inches	$6\frac{3}{4}$	$7\frac{1}{2}$	$7\frac{1}{4}$	$6\frac{1}{4}$	$9\frac{1}{4}$	$7\frac{3}{4}$	$7\frac{1}{2}$	$6\frac{3}{4}$	$8\frac{1}{2}$

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 $22\frac{2}{3}$ 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 156 pints of chocolate marshmallow ice cream. Each container of ice cream you sell contains $6\frac{1}{2}$ pints. You sold half of the containers of chocolate marshmallow ice cream. How many containers are left?

CHALLENGE #2: ICE CREAM FLAVORS

The table below shows how many containers of each ice cream flavor you sold in one week, but some information is missing. Use the clues to determine the missing numbers and fill in the table.

Ice Cream Flavor	Raspberry Dragon Fruit	Cinnamon Apple Cobbler	Brownie Batter Explosion	Rainbow Sherbet	Mango Vanilla Swirl	Almond Coconut Crunch	Strawberry Cheesecake Delight
Number of Containers Sold			54			36	

Clues:

1. You sold 6 times more containers of Brownie Batter Explosion than Rainbow Sherbet.
2. You sold 12 containers more of Raspberry Dragon Fruit than Almond Coconut Crunch.
3. You sold 4 times more containers of Raspberry Dragon Fruit than Cinnamon Apple Cobbler.
4. You sold an equal number of containers of Cinnamon Apple Cobbler, Rainbow Sherbet, and Mango Vanilla Swirl all together as containers of Brownie Batter Explosion.
5. The number of containers of Strawberry Cheesecake Delight sold is more than Almont Coconut Crunch but less than Raspberry Dragon Fruit, and it is divisible by 7.

Use this area to show your work

CHALLENGE #3: TOPPINGS GALORE

You want to offer some new ice cream toppings on your ice cream truck. You ask your toppings supplier which toppings are available. The table below shows your purchase price and selling price for each topping.

Topping	Price to Purchase from Supplier	Price to Sell to Customers	Profit (How much you earn from each topping sold)
Marshmallows	10¢	20¢	
Chocolate chips	28¢	45¢	
Peanut butter sauce	25¢	40¢	
Walnuts	50¢	65¢	
Cheesecake bits	48¢	70¢	

1. Complete the "Profit" column in the table.

2. If you were to sell 100 ice creams with each of the toppings in the table, what would your profit be from each topping?

_____ Marshmallows

_____ Chocolate chips

_____ Peanut butter sauce

_____ Walnuts

_____ Cheesecake bits

3. Which 3 toppings do you choose to add to your menu? How did you decide on these toppings?

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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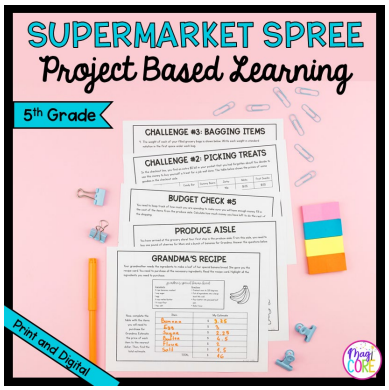

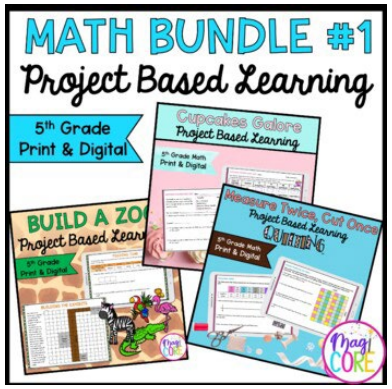

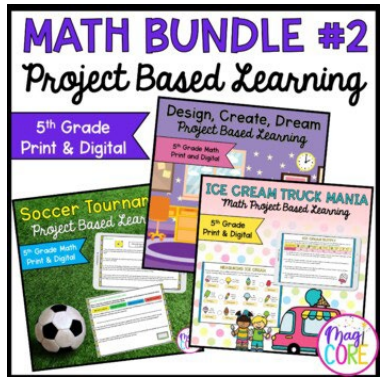

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