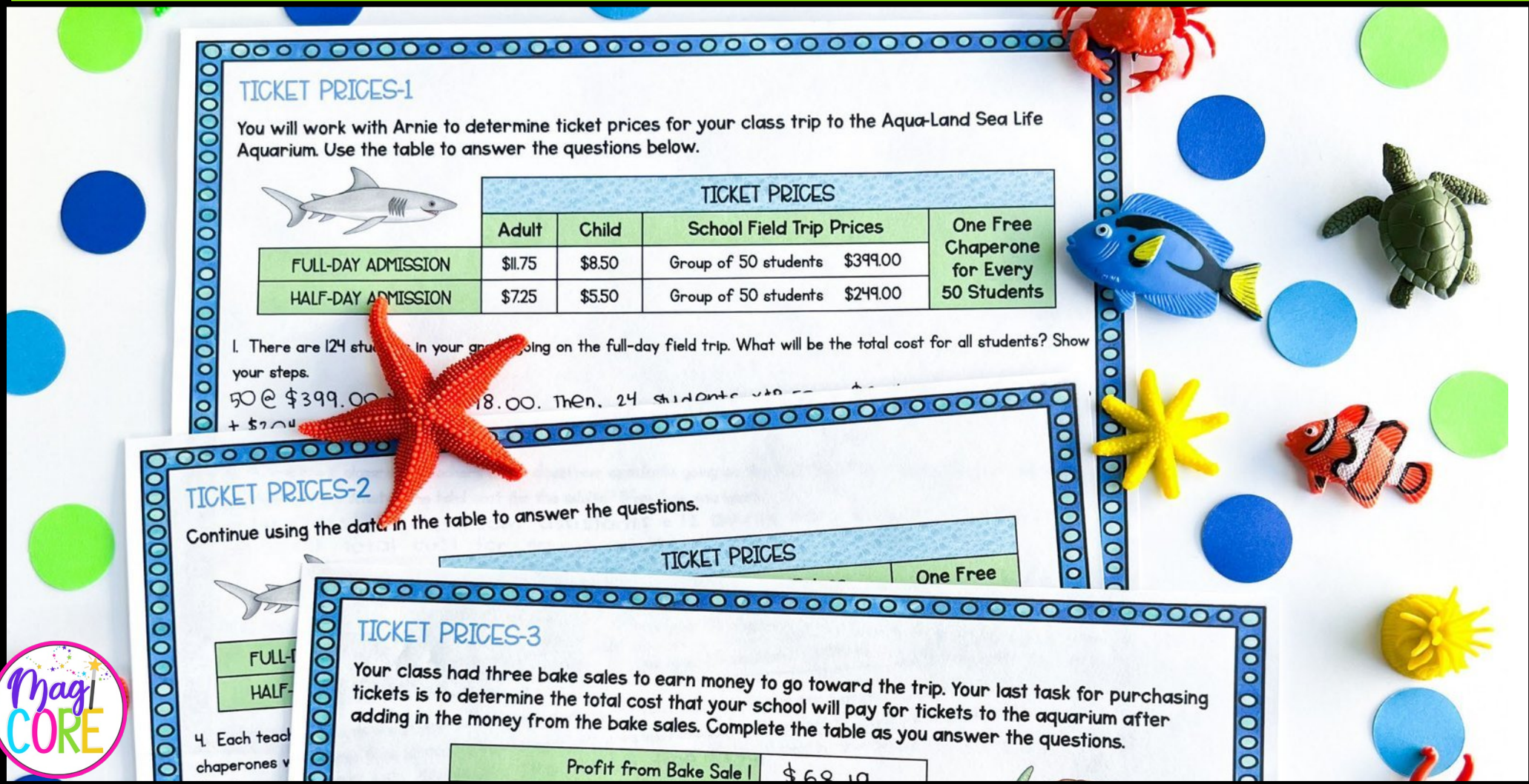
TRIP TO THE AQUARIUM

Project Based Learning

4th Grade Print & Google Slides



LIFE IN THE RAINFOREST-1

Life in the Rainforest is an amazing exhibit at the aquarium. One of their most popular attractions is the display of tree frogs. They come in all different colors and sizes. Some are poisonous, and some are not. Perhaps one of the more exciting things for visitors is to watch the tree frogs jump. Use the data in the table to answer the questions about the rainforest tree frogs.



RAINFOREST TREE FROGS						
	Red Eyed	Blue Dart	Squirrel	Amazon	Cuban	Goliath
Average length of frog (in inches)	2.5 inches	1.5 inches	1 inch	6 inches	3 inches	12 inches
Distance of one jump (in feet)	1 foot	0.75 feet	0.5 feet	1.5 feet	3 feet	2.5 feet
Distance of one jump (in inches)	12 inches	9 inches	6 inches	18 inches	36 inches	30 inches

1. Convert the distance each frog jumps from feet to inches. Add the numbers to the table.

2. W
answ
firm
di ff
3. T
jump
SQ
4 I

LIFE IN THE RAINFOREST-2

More popular animals to see in the *Life in the Rainforest* exhibit are the snakes. The snakes live in large tanks and are many different lengths. Use the data in the table to answer the questions about snakes.

SNAKE LENGTHS WHEN FULLY GROWN						
	Boa	Python	King	Viper	Coral	Cobra
Length in Inches	102	60	72	30	42	
Length in Feet	8 ½	5	6	2 ½	3 ½	

1. Convert the length of each snake to feet. Add the numbers to the table.

2. There are three fully grown adult King snakes at the aquarium. If you laid them end to end, about how many feet long would they be? Show with a model.

72 x 3 = 218 inches or 6 x 3 = 18 feet

3. A baby cobra was born in May. It was 13 inches long. In October, it measured 79 inches. How many feet did the cobra grow from May to October?

79 - 13 = 66 inches, 66 ÷ 12 = 5 ½ feet.

© Gale Bacha

- Realistic learning situations
- Print & Go, Low Prep

Millie's Age									
Ziggy's Age	1	2	5	7	10	14	26	31	37

2. What is the rule for the In/Out machine?
Subtract 5 years from Millie's age to find out Ziggy's age.

3. How old is Ziggy now? Show how you know.
42 - 5 = 37, Ziggy is 37 years old now.

4. How old will Ziggy be when Millie is 48 years old?
48 - 5 = 43, Ziggy will be 43 years old.

5. How old was Millie when Ziggy had his 18th birthday? Show with an equation.
When Ziggy was 18, Millie was 23 years old, 18 + 5 = 23.

DOLPHIN DISCOVERY-2

Solve the word problems below.

6. Sophie was born when Ziggy was 7 1/2 years old. She, too, lives at the aquarium with Millie and Ziggy. Complete the In/Out machine to help you determine how old Sophie is now.

Ziggy's Age	IN AND OUT MACHINE								
	8 1/2	11	12 1/2	15 1/2	18	23 1/2	28 1/2	34 1/2	37
Sophie's Age	1	3 1/2	5	8	10 1/2	16	21	27	29 1/2

7. What is the rule for the In/Out machine?
Ziggy and Sophie are 7 1/2 years apart so
Sophie's age

Meaningful practice of 4th grade math skills.

Promotes critical thinking and problem solving.



	TICKET PRICES			
	Adult	Child	School Field Trip Prices	One Free Chaperone for Every 50 Students
FULL-DAY ADMISSION	$11.75	$8.50	Group of 50 students $399.00	
HALF-DAY ADMISSION	$7.25	$5.50	Group of 50 students $249.00	

1. There are 124 stu… in your gr… going on the full-day field trip. What will be the total cost for all students? Show your steps.

50 @ $399.00 … 18.00. Then, 24 students …

TICKET PRICES-2

Continue using the data in the table to answer the questions.



TICKET PRICES

One Free

FULL-…

HALF-…

4. Each teach… chaperones …

6 chape…

4 chape…

5. What wi…

6. Arnie's … students … thank-yo…

TICKET PRICES-3

Your class had three bake sales to earn money to go toward the trip. Your last task for purchasing tickets is to determine the total cost that your school will pay for tickets to the aquarium after adding in the money from the bake sales. Complete the table as you answer the questions.

Profit from Bake Sale 1	$68.19
Profit from Bake Sale 2	$77.77
Profit from Bake Sale 3	$63.36
TOTAL EARNED FROM BAKE SALES	$209.32



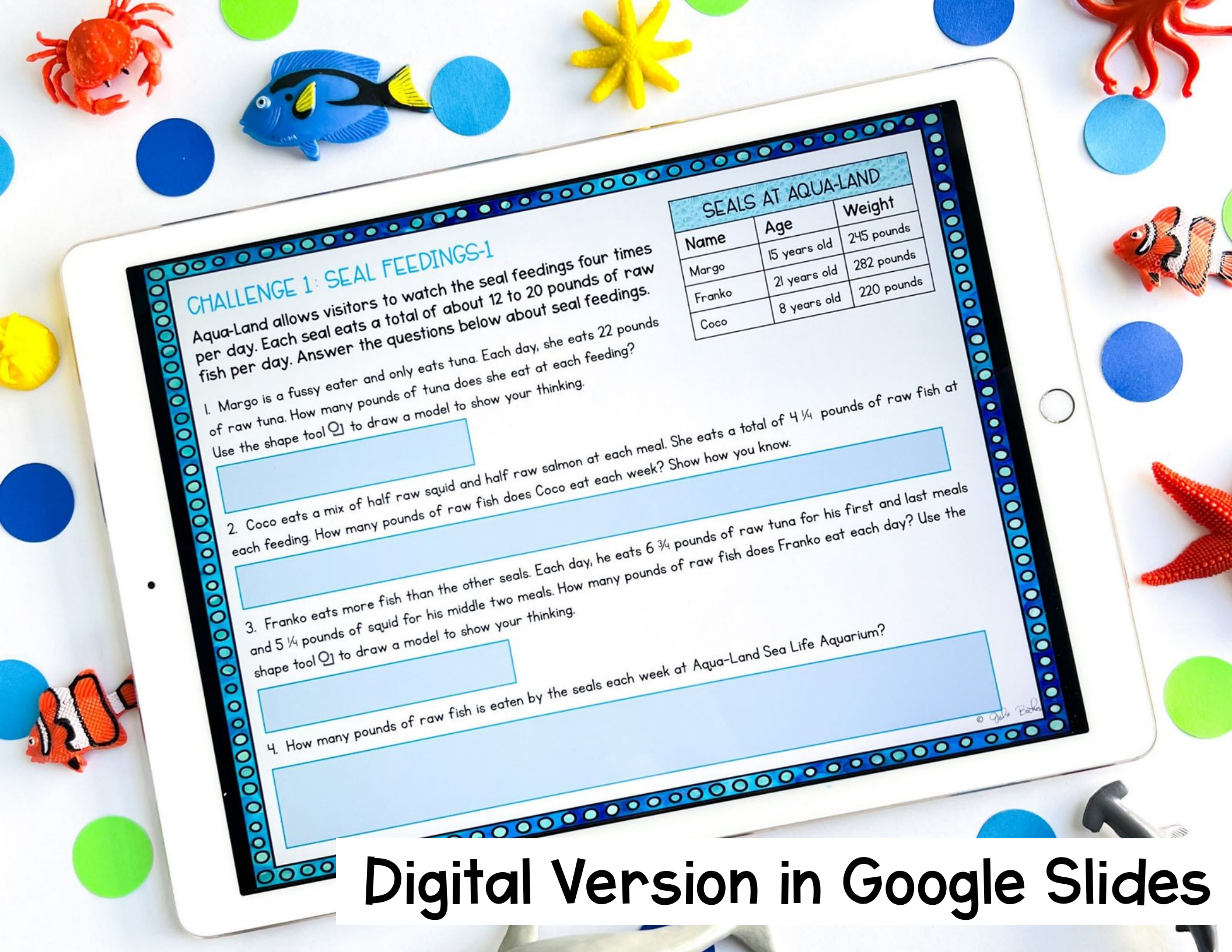
7. Ms. Rodrigues, your classroom teacher, lost the slips with the totals for each Bake Sale. She has $209.32 in an envelope marked "Money Earned from Bake Sales" and knows that the total profit from the second sale was $77.77. How much profit was earned from the first and third sales?

The amount earned at the first and third bake sales is $209.32 - $77.77 = $131.55.

8. Evan found a slip of paper on Ms. Rodrigues' desk that has "$68.19 earned from Bake Sale number one" written on it. What is the profit from Bake Sale number three?

$131.55 - $68.19 = $63.3 profit from bake sale 3.

9. Ms. Rodrigues gave the money from the bake sales to the principal to help pay for tickets. …



Digital Version in Google Slides

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6. Chaperones (Divide students into groups)
7. Schedule for the Day (Creating a schedule, Time, Timeline, Word problems)
8. Dolphin Discovery (Determine ages with In/Out machine)
9. Penguin Palooza (Organize data, Bar graph and Line plot)
10. Life in the Rainforest (Compare frog length to distance jumped, Snake length word problems, Comparing age and weight of tortoises)
11. Challenge 1: Seal Feedings-1 (Calculate pounds of food)
12. Challenge 1: Seal Feedings-2 (Cost to purchase seal food)
13. Challenge 2: Gift Shop (Determine sales, Calculate percentage of money donated to Coral Reef Alliance)



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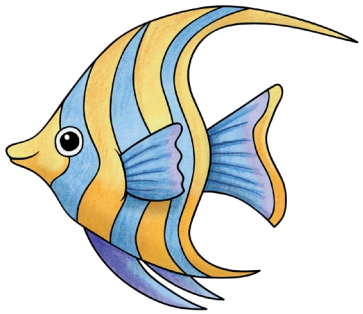
FOR THE TEACHER

A TRIP TO THE AQUARIUM is a project-based learning task that provides students with real world problems as they practice the following math standards

- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole number answers using the four operations.
- 4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.
- 4.NBT.B.4 Fluently add and 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, and multiply two two-digit numbers, using strategies based on place value and properties of operations. Illustrate and explain.
- 4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, properties of operations, and/or the relationship between multiplication and division.
- 4.NF.B.3.D Solve word problems involving addition and subtraction of fractions by using visual fraction models and equations.
- 4.NF.B.4.C Solve word problems involving multiplication of a fraction by a whole number.
- 4.NF.C.7 Compare two decimals by hundredths by reasoning about their size.
- 4.MD.A.1 Know relative sizes of measurement units within one system of units.
- 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams, such as number line diagram that feature a measurement scale.
- 4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit.

DIRECTIONS:

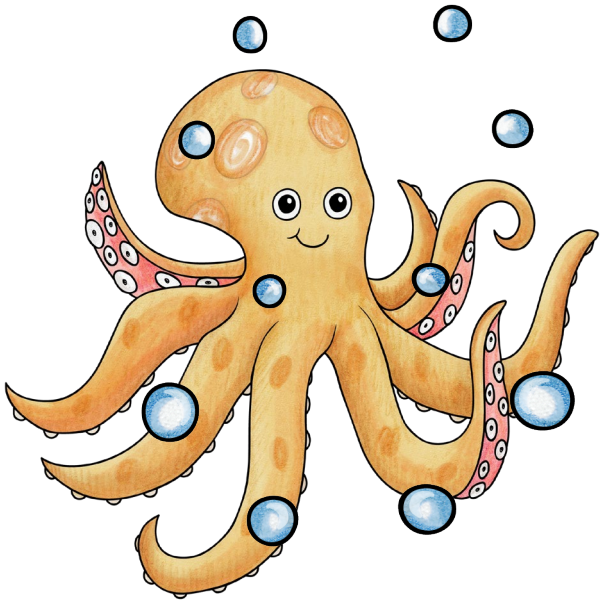
1. Assign students to work alone or in small groups.
2. Preview the activity with your students.
3. Allow students class time to complete the activity. This can span over several days.
4. Students have an opportunity to complete optional extra challenge activities.
5. Students will complete the self-evaluation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



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A TRIP TO THE AQUARIUM

Welcome to your school field trip adventure. In this packet, you will help to plan your class field trip to a local aquarium.



HERE ARE YOUR TASKS:

- Read through the entire packet before beginning.
- Read the informational slide about your school field trip.
- Calculate ticket prices for adults and students.
- Answer word problems about ticket pricing.
- Determine the best option for transportation based on prices, seating, and travel speed.
- Solve time-related word problems about busing.
- Help divide students into groups for chaperones.
- Create a schedule and timeline for the day by choosing shows and exhibits.
- Calculate the ages of the dolphins.
- Explore penguin data to create a bar graph and a line plot.
- Write questions to share with a friend using the data from your bar graph.
- Compare distances the rainforest tree frogs can jump.
- Compare the lengths of the rainforest snakes.
- Use data to determine weights and ages of the Galapagos Tortoises.
- (Optional) Challenge pages: Calculate cost to feed the seals each week. Then, determine the amount of money donated to the *Coral Reef Alliance.*
- Complete the self-reflection and evaluation rubric.

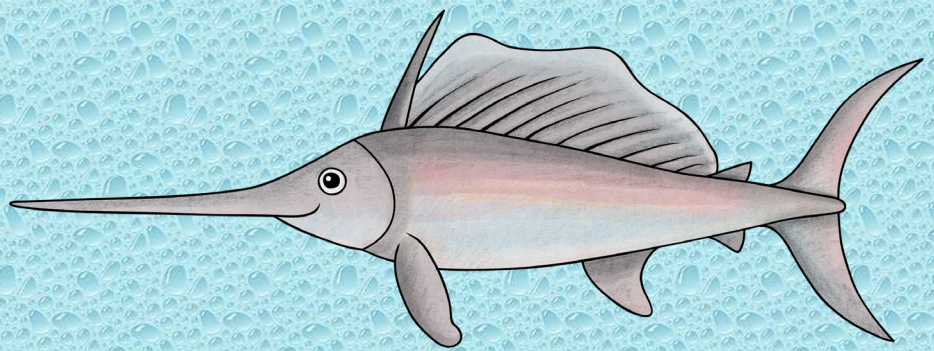
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PLANNING A SCHOOL TRIP TO THE AQUARIUM



Your grade always ends the school year with a special field trip. This year, the students voted to visit the Aqua-Land Sea Life Aquarium. It is the largest aquarium in your state and has an amazing display of sea life and animal shows. The Aqua-Land Sea Life Aquarium is home to thousands of aquatic animals and offers a wide range of science exhibits to interest people of all ages. They are proud of their large touch tank and huge coral reef tank that houses hundreds of saltwater sea life.

All successful school field trips begin with excellent planning. You, several of your classmates, and your teachers have volunteered to work on the planning committee. You will help determine how much the field trip will cost. You will also help make decisions about renting buses, creating a schedule for the day, and choosing educational classes. However, the most important task for the planning committee is to make sure everyone stays safe and has fun. So, let's get busy planning the very best field trip of the year.



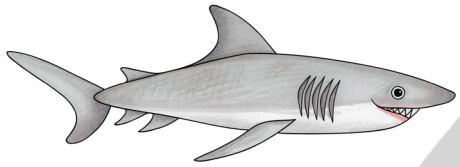




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TICKET PRICES-1

You will work with Arnie to determine ticket prices for your class trip to the Aqua-Land Sea Life Aquarium. Use the table to answer the questions below.

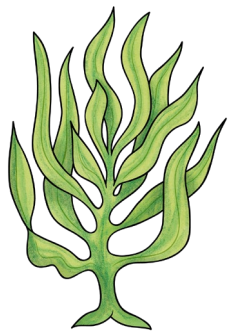


TICKET PRICES					
	Adult	Child	School Field Trip Prices		One Free Chaperone for Every 50 Students
FULL-DAY ADMISSION	$11.75	$8.50	Group of 50 students	$399.00	
HALF-DAY ADMISSION	$7.25	$5.50	Group of 50 students	$249.00	

1. There are 124 students in your grade going on the full-day field trip. What will be the total cost for all students? Show your steps.

2. There are 6 classroom teachers and 6 classroom assistants going on the field trip. They will pay the adult full-day admission price. What is the total cost for the adults? Show how you know.

3. How much money will your school save by paying the Group price for students?



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TRANSPORTATION-1

Now that the planning committee has completed purchasing tickets, it is time to consider options for transportation to Aqua-Land. Use the information in the table to answer the questions below.

	TRANSPORTATION	
	Cost per Bus	Seats per Bus
SCHOOL BUSES	$149.00	48
COACH BUSES	$297.00	72

1. How many people will be traveling by bus to Aqua-Land? Include students, teachers, instructional assistants, and chaperones. Show your thinking on the number line below.

2. Determine how many buses you would need to rent for each type of bus. Show how you know.

SCHOOL BUSES

COACH BUSES

3. Calculate how many extra seats there will be for each type of bus. Show how you know.

EXTRA SEATS ON SCHOOL BUSES

EXTRA SEATS ON COACH BUSES



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BUSING WORD PROBLEMS-1

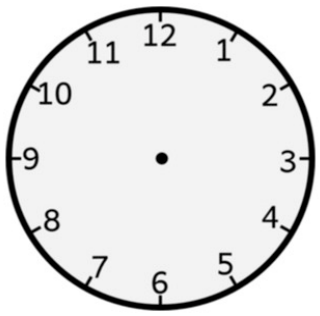
Aqua-Land is 47 miles from your school. Read the information about travel time for each bus, and answer the questions below.

COACH BUS	SCHOOL BUS
Average speed = 60 miles per hour	Average speed = 47 miles per hour
Travel time = 47 minutes	Travel time = 60 minutes

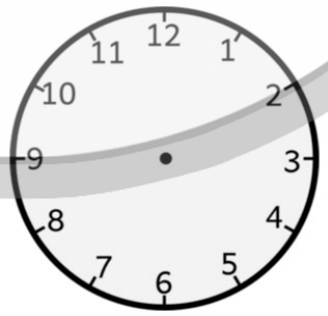
1. Show the difference in time it takes each type of bus to get to the aquarium using the number line below.

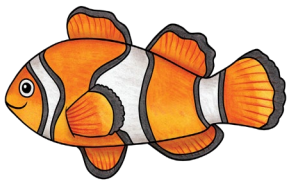
2. The aquarium opens at 8:45 am. If your plan is to arrive when the aquarium opens, what time would the buses need to leave your school? Write the start time in the box and show it on the analog clock.

COACH BUS



SCHOOL BUS





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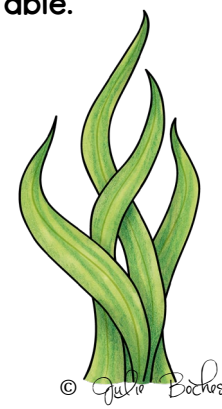
CHAPERONES-1

Each class will have 1 teacher, 1 classroom assistant, and 1 parent who will be chaperones for the students. Not all classes have the same number of students. Your task is to create groups in each class that show how many students each chaperone will oversee.

TEACHER	NUMBER OF STUDENTS IN EACH CLASS	SHOW YOUR WORK	NUMBER OF STUDENTS IN EACH GROUP
Mrs. Guyer	21		
Mr. Murphy	24		
Ms. Craddock	24		
Miss Buckley	27		
Mrs. Peterson	23		
Ms. Rodrigues	25		

1. Divide the number of students in each class into groups that are of similar size. Show your work on the table.

2. How do Mrs. Peterson's and Ms. Rodrigues' classes differ from each of the other classes?



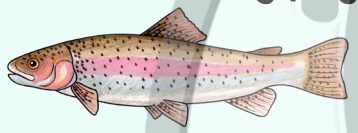
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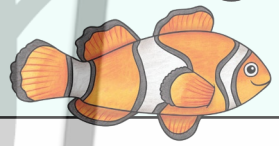
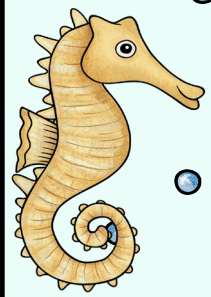
SCHEDULE FOR THE DAY-1

All chaperones will receive this schedule of shows and events. Together, each chaperone and their students will create a schedule for the day. The only rules they must follow are:

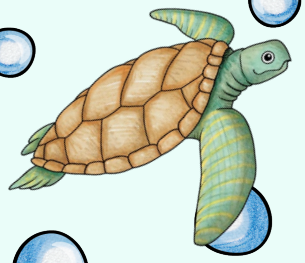
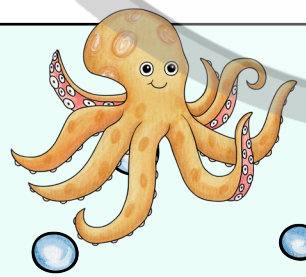
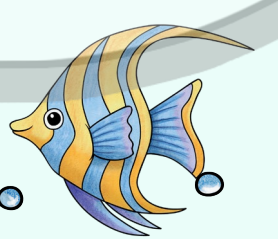
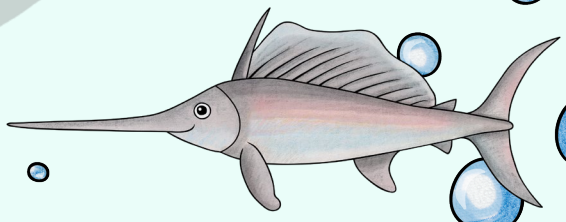
1. Pick one time for each show. Be sure shows do not overlap.
2. Lunch will be outside at the picnic tables. Everyone will meet for lunch at 12:05 pm.
3. Use the bathroom before boarding the buses.
4. Everyone must be on the buses by 4:25 pm.

Here is today's schedule for Aqua-Land Sea Life Aquarium. You will use the information to answer questions on the following pages.



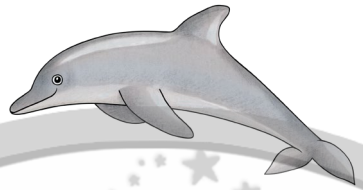



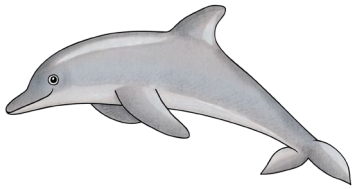

AQUA-LAND SHOWS AND EVENTS	TODAY'S SCHEDULE	
	Show Times	Minutes
The George and Gracie Orca Show	9:15, 10:15, 11:15, 2:15	45
Dolphin Discovery-Meet Millie, Ziggy, and Sophie	10:30, 1:30	60
Daily Seal Feedings with Trainers	9:45, 12:30, 3:15	25
Live Web-Cam from Australia's Shark Alley	11:30, 2:30	30
Touch Tank Classroom	10:00, 11:30, 1:30, 3:00	45

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DOLPHIN DISCOVERY-1



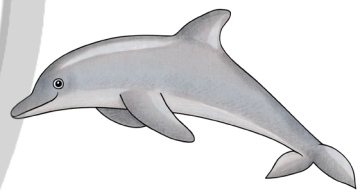


Solve the word problems below.

1. Millie is a 42-year-old dolphin who has lived at the aquarium for over 40 years. One of her offspring, Ziggy, also lives at the aquarium. Ziggy was born when Millie was 5 years old. Complete the In/Out machine to help you find out how old Ziggy is now.

IN AND OUT MACHINE								
Millie's Age	6	7	10	12	15	24	31	39	42
Ziggy's Age	1			7					

2. What is the rule for the In/Out machine?



3. How old is Ziggy now? Show how you know.

4. How old will Ziggy be when Millie is 48 years old?

5. How old was Millie when Ziggy had his 18th birthday? Show with an equation.

© Julie Bochos

PENGUIN PALOOZA-1

The penguin habitat is a major attraction at Aqua-Land Sea Life Aquarium. There are 10 different types of penguins that live at the aquarium. Use the data below to create a bar graph of the number of penguins you will see on your field trip. Write a title in the gray box.

PENGUINS	King	Macaroni	Chinstrap	Rockhopper	Little Blue	Gentoo	Adelie	Emperor	Royal	Galapagos
HOW MANY	46	35	27	49	42	17	23	39	33	31





KING																									
MACARONI																									
CHINSTRAP																									
ROCKHOPPER																									
LITTLE BLUE																									
GENTOO																									
ADELIE																									
EMPEROR																									
ROYAL																									
GALAPAGOS																									

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50

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LIFE IN THE RAINFOREST-1

Life in the Rainforest is an amazing exhibit at the aquarium. One of their most popular attractions is the display of tree frogs. They come in all different colors and sizes. Some are poisonous, and some are not. Perhaps one of the more exciting things for visitors is to watch the tree frogs jump. Use the data in the table to answer the questions about the rainforest tree frogs.





RAINFOREST TREE FROGS						
	Red Eyed	Blue Dart	Squirrel	Amazon	Cuban	Goliath
Average length of frog (in inches)	2.5 inches	1.5 inches	1 inch	6 inches	3 inches	12 inches
Distance of one jump (in feet)	1 foot	0.75 feet	0.5 feet	1.5 feet	3 feet	2.5 feet
Distance of one jump (in inches)						

1. Convert the distance each frog jumps from feet to inches. Add the numbers to the table.

2. What is the difference in the distance jumped between the Amazon Tree Frog and the Goliath Tree Frog. Show your answer in inches with an equation.

3. The Amazon Tree Frog jumps 3 times its body length. How many times its body length does the Squirrel Tree Frog jump? Show how you know.

4. How many jumps must the Blue Dart Frog take to go the same distance the Cuban Tree Frog can jump in one jump?

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CHALLENGE 1: SEAL FEEDINGS-1

Aqua-Land allows visitors to watch the seal feedings four times per day. Each seal eats a total of about 12 to 20 pounds of raw fish per day. Answer the questions below about seal feedings.

SEALS AT AQUA-LAND		
Name	**Age**	**Weight**
Margo	15 years old	245 pounds
Franko	21 years old	282 pounds
Coco	8 years old	220 pounds

1. Margo is a fussy eater and only eats tuna. Each day, she eats 22 pounds of raw tuna. How many pounds of tuna does she eat at each feeding? Draw a model to show your thinking.

2. Coco eats a mix of half raw squid and half raw salmon at each meal. She eats a total of 4 ¼ pounds of raw fish at each feeding. How many pounds of raw fish does Coco eat each week? Show how you know.

3. Franko eats more fish than the other seals. Each day, he eats 6 ¾ pounds of raw tuna for his first and last meals and 5 ¼ pounds of squid for his middle two meals. How many pounds of raw fish does Franko eat each day? Draw a model to show your thinking.

4. How many pounds of raw fish is eaten by the seals each week at Aqua-Land Sea Life Aquarium?

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CHALLENGE 2: GIFT SHOP

The Aqua-Land Gift Shop sells a set of plush stuffed sea animals. It is one of the best-selling items in the shop. Each week in June and July, the gift shop donates 10% of the sales of the plush animal set to the *Coral Reef Alliance.* This alliance helps to make coral reefs healthier for the millions of sea animals that live there. Use the data in the table to answer the questions below.

	WEEK 1	WEEK 2	WEEK 3	WEEK 4
TOTAL SALES IN JUNE	$1637.40	$923.50	$1585.40	$1471.90
ROUNDED TO THE NEAREST 100				
TOTAL DONATION TO THE CORAL REEF ALLIANCE	$163.74	$92.35	$158.54	$147.19
DONATION ROUNDED TO THE NEAREST WHOLE NUMBER				

1. Round the sales of the plush stuffed animal set to the nearest hundred. Write the answers in the table.

2. Round the money donated to *Coral Reef Alliance* to the nearest whole number. Write your answers in the table.

3. What is the total amount of money donated to the *Coral Reef Alliance* in the month of June?

4. The Aqua-Land Gift Shop donated a total of $1280.91 for the months of June and July combined. How much money did they donate in July?

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A TRIP TO THE AQUARIUM

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

Drag the checkmark to the statement you most agree with.

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

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RUBRIC

SELF-EVALUATION RUBRIC: Shade the descriptor in each column that best explains how you would evaluate yourself on this project.

		
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 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 determine 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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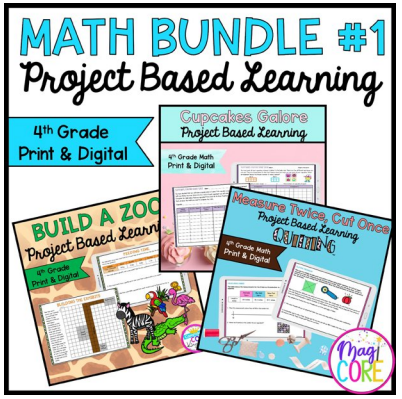
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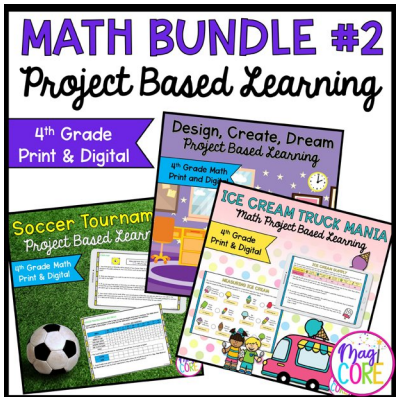
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