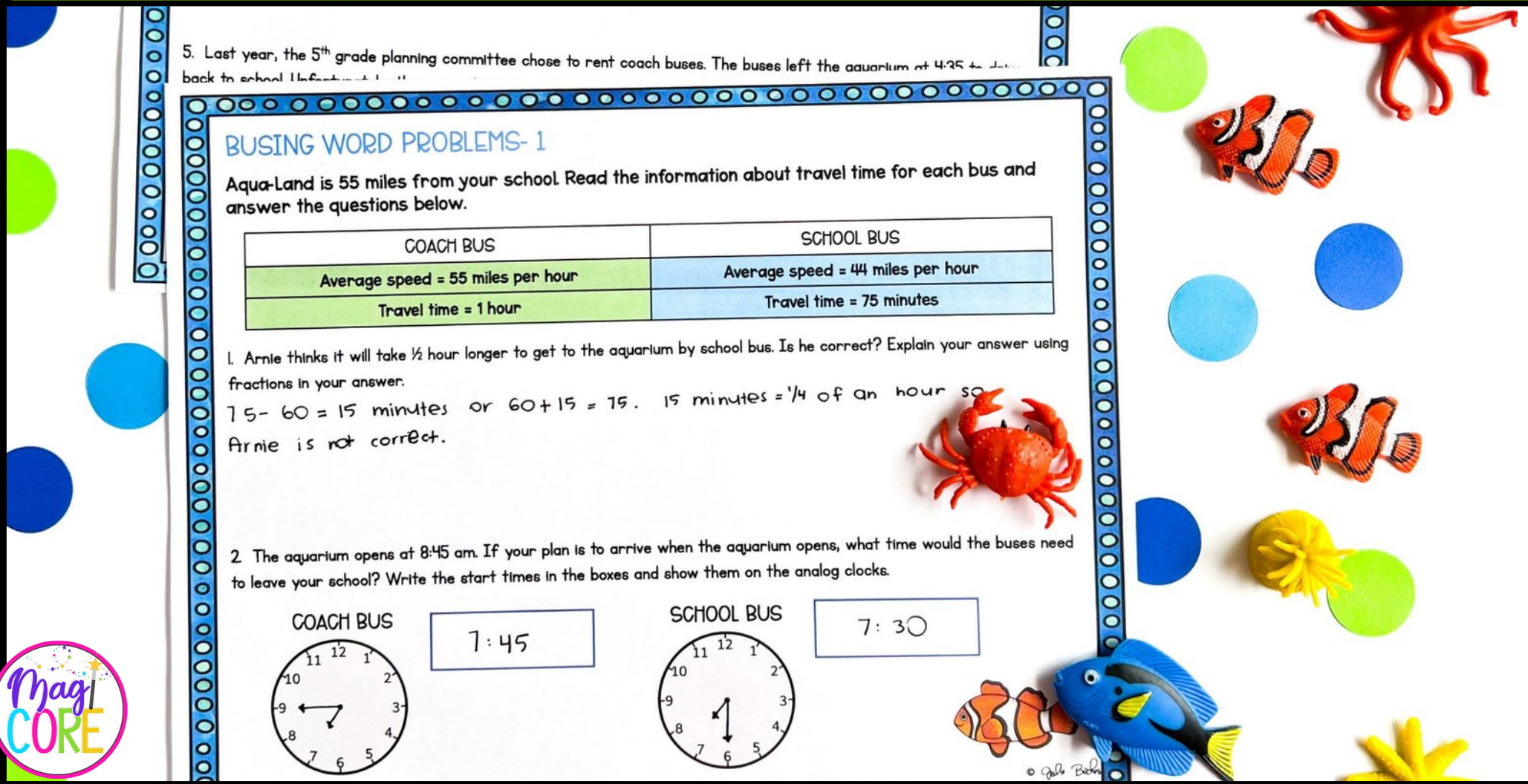
TRIP TO THE AQUARIUM

Project Based Learning

5th 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. One of the more exciting experiences is seeing 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)	1.25 feet	0.75 feet	0.5 feet	1.5 feet	3.0 feet	2.5 feet
Distance of one jump (in inches)	15 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. What is the difference in the distance jumped between the Red Eyed Tree Frog and the Blue Dart Tree Frog. Show your answer in a equation.
Red eyed ...ches; Blue dart frog jumps 9 inches, 15 - 9 = 6 inches diff...

3. The Ama... times its body length does the Cuban Tree Frog Jump? Show...
Cuban ...

4. How m...
Goliath ...

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	33	51	144
Length in Feet	8.5	5	6	2.75	4.25	12

1. Convert the length of each snake to feet. Write your answers in the table as decimals.

2. There are three fully grown Coral snakes at the aquarium. If you laid them end to end, about how many feet long would they be? Draw a model to show your answer. Write your answer as a decimal.

3 (coral snakes) x 4.25 = 12.75 feet

3. A baby cobra was born in May. It was 9 inches long. In December, it measured 87 inches. How many **feet** did the cobra grow from May to December? Show... as a decimal.
...ches. The cobra grew ...

...ake a cobra to be fully grown? Show your ...

- Realistic learning situations
- Print & Go, Low Prep

1. There are 147 students ... the "Group of 50" pricing?
50 @ $397.00 x 2 = $794.00 ; then 47 students x ...
+ $399.50 = $1193.50 for all students.

2. How much ...

TICKET PRICES- 2

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

TICKET PRICES			
	Adult	Child	School Field Trip Prices
FULL-DAY ADMISSION	$11.99	$8.50	Group of 50 students $399.00
HALF-DAY ADMISSION	$7.99	$5.50	Group of 50 students $249.00
			One Free Chaperone for Every 35 Students

4. Each teacher will ask one parent to be a chaperone on the field trip to the aquarium. Considering that some chaperones will receive free admission, how many chaperones will have to pay for a ticket? What will the total cost be?
8 teachers bring one chaperone each, so 8 chaperones. One free chaperone for every 35 students, so that is 4 free chaperones, 35 x 4 = 140 (total of 147 students).
... = 4 x $11.99 = $47.96.

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	$85.68
Profit from Bake Sale 2	$78.97
Profit from Bake Sale 3	$74.67
...ED FROM BAKE SALES	$239.32

... Sale. She has $239.32 in an
...cond sale was
... - $78.97

Meaningful practice of 5th grade math skills.

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.

22 ÷ 4 = 5.5 or 5 1/2 pounds per feeding

2. Coco eats a mix of half raw squid and half raw salmon at each meal. She eats a total of 4 1/4 pounds of raw fish at each feeding. How many pounds of raw fish does Coco eat each week? Show how you know.

4 1/4 x 4 = 17 pounds of raw fish per day. 17 x 7 days = 119 pounds per week.

3. Franko eats more fish than the other seals. Each day, he eats 6 3/4 pounds of raw tuna for his first and last meals and 5 1/4 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.

Franko eats 2 meals of 6 3/4 + 6 3/4 = 13 1/2, and two meals of 5 1/4 + 5 1/4 = 10 1/2, add 13 1/2 + 10 1/2 = 24 pounds of raw fish per day.

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

Margo eats 22 pounds per day, Coco eats 17 pounds per day, and Franko eats 24 pounds per day, 22 + 17 + 24 = 63 pounds eaten per day. 63 x 7 = 441 pounds of raw fish eaten each week by the seals.

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Promotes critical thinking and problem solving.

TRANSPORTATION- 3

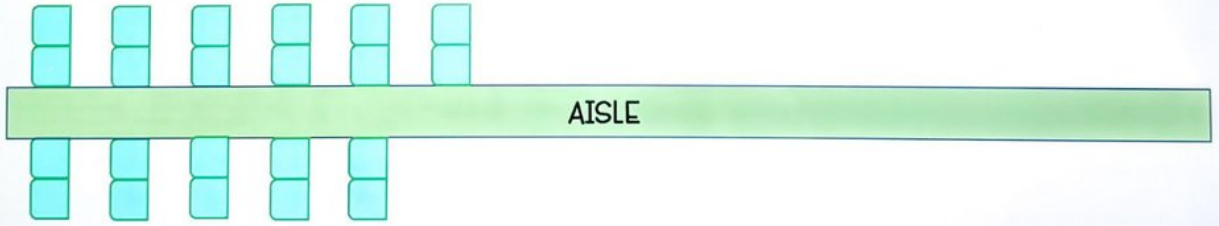


Answer the following word problems using the transportation data.

7. The bench seats on the school bus hold 3 passengers each. We know the total number of passengers that can fit on the bus is 48. How many bench seats are on the bus? Use the shape tool to draw a model to show your thinking.

8. The coach bus has 64 individual seats that are grouped together in pairs. How many pairs of seats are there on the coach bus? Show how you know.

9. The pairs of seats on the coach bus are divided equally with two seats on each side of a middle aisle. Finish the diagram below by using the shape tool to draw in the remaining seats. How many **pairs** of seats are on **each side** of the bus?



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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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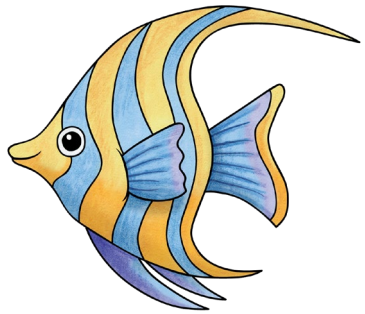
FOR THE TEACHER

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:

- 5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 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, using strategies based on place value, the properties of operations, and/or the relationship between mult/div. Illustrate and explain calculations.
- 5.NBT.B.7 Add, sub., mult., and div. decimals to the hundredths, using concrete models, drawings, or strategies based on place value, properties of operations, and/or the relationship between add/sub. Relate to a written method and explain reasoning.
- 5.NF.A.1 Add/sub fractions with unlike denominators by replacing given fractions with equivalent fractions, in such a way as to produce an equivalent sum or difference of fractions with like denominators.
- 5.NF.A.2 Solve word problems involving add/sub of fractions referring to the same whole, including cases of unlike denominators.
- 5.NF.B.3 Interpret a fraction as division of the numerator by the denominator. Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.
- 5.NF.B.4 Apply and extend previous understanding of multiplication to multiply a fractions or whole number by a fraction.
- 5.NF.B.6 Solve real world problems, involving multiplication of fractions and mixed numbers.
- 5.MD.B.2 Make a line plot to display a data set of measurements in fractions. Use operations to solve problems in the line plots.

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.

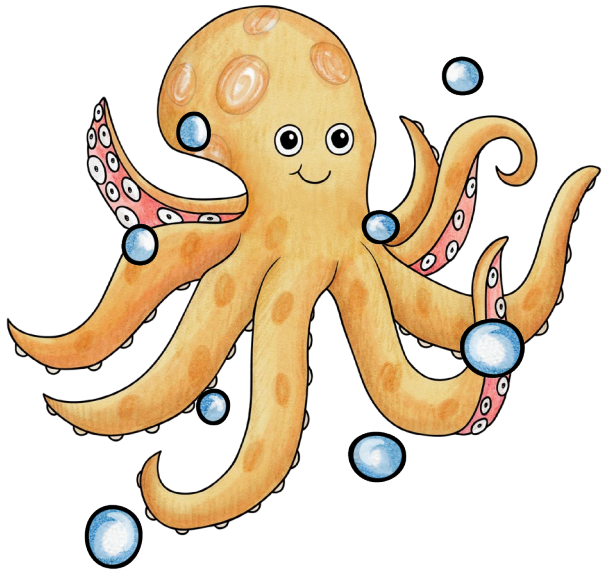


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A TRIP TO THE AQUARIUM

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.

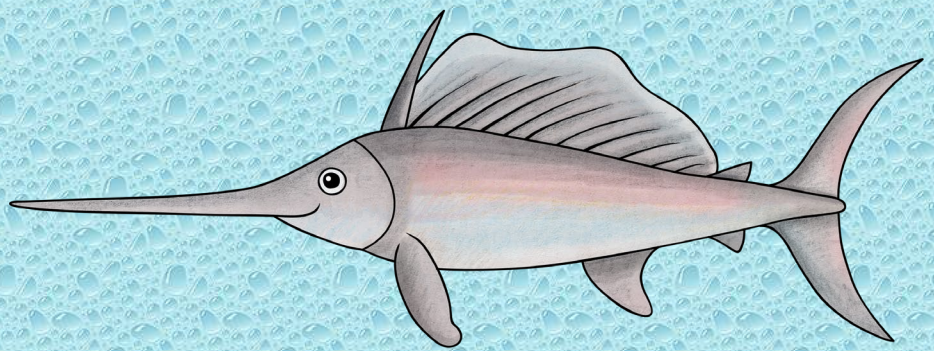
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PLANNING A SCHOOL TRIP TO THE AQUARIUM



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.



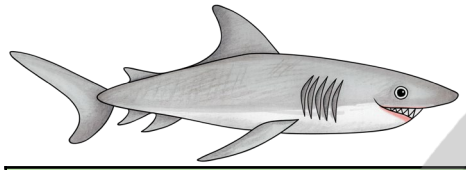




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TICKET PRICES- 1

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.

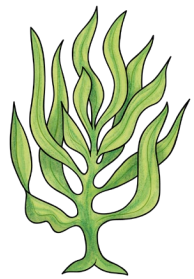


TICKET PRICES				
	Adult	Child	School Field Trip Prices	One Free Chaperone for Every 35 Students
FULL-DAY ADMISSION	$11.99	$8.50	Group of 50 students $397.00	
HALF-DAY ADMISSION	$7.99	$5.50	Group of 50 students $247.00	

1. There are 147 students in your grade going on the full-day field trip. How much will it cost for all students if you use the "Group of 50" pricing?

2. How much money will your school save by paying the "Group of 50" price for students? Show your comparison.

3. There are 8 classroom teachers and 8 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.



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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	$227.00	64

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

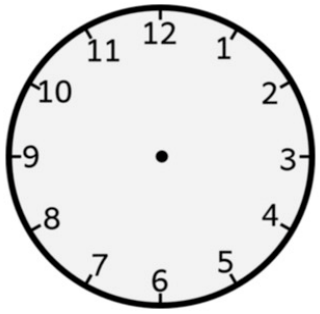
Aqua-Land is 55 miles from your school. Read the information about travel time for each bus and answer the questions below.

COACH BUS	SCHOOL BUS
Average speed = 55 miles per hour	Average speed = 44 miles per hour
Travel time = 1 hour	Travel time = 75 minutes

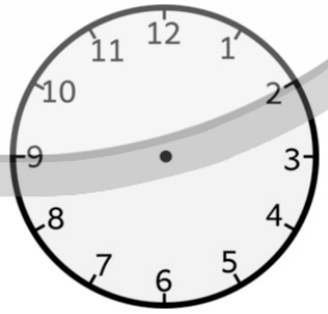
1. Arnie thinks it will take ½ hour longer to get to the aquarium by school bus. Is he correct? Explain your answer using fractions in your answer.

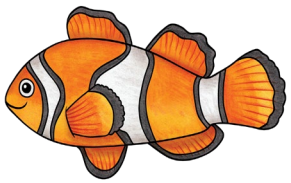
2. The aquarium opens at 8:45 am. If your plan is to arrive when the aquarium opens, what time would the buses need to leave your school? Write the start times in the boxes and show them on the analog clocks.

COACH BUS



SCHOOL BUS





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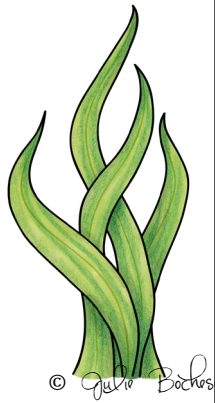
CHAPERONES- 1

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	SHOW YOUR WORK	NUMBER OF STUDENTS IN CHAPERONED GROUPS
Mrs. Guyer	18		
Mr. Murphy	21		
Mr. Brown	19		
Miss Buckley	21		
Mrs. Roy	18		
Ms. Rodrigues	17		
Ms. Craddock	18		
Mrs. Bates	15		

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

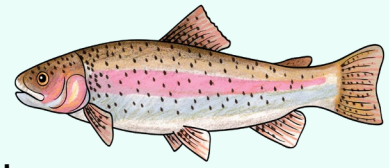
2. How do Ms. Rodrigues' and Mr. Brown's classes differ from each of the other classes?



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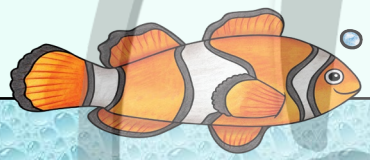
SCHEDULE FOR THE DAY- 1

Busses will arrive at the aquarium at 8:45. After purchasing tickets, each group will be ready to start their day at 9:00. 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:



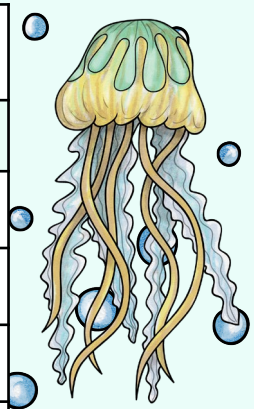
1. Pick one time for each show. Be sure shows do not overlap.
2. Every chaperone must include 25 minutes for a lunch break for their group.
3. Leave 10 minutes at the end of the day for a bathroom break before boarding the buses.
4. Everyone must be on the buses by 4:25 pm.

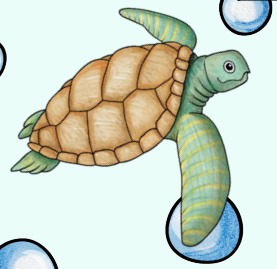
HERE IS TODAY'S SCHEDULE FOR AQUA-LAND SEA LIFE AQUARIUM.
YOU WILL USE THE INFORMATION TO ANSWER QUESTIONS ON THE FOLLOWING PAGES.



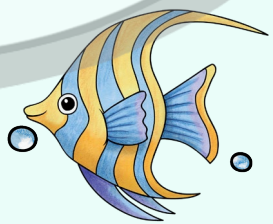
AQUA-LAND SHOWS AND EVENTS	TODAY'S SCHEDULE	
	Show Times	Minutes
The George and Gracie Orca Show	9:15, 10:15, 11:15, 2:15	45
Dolphin Discovery-Meet Millie, Ziggy, and Sophie	10:30, 1:30	75
Daily Seal Feedings with Trainers	9:45, 12:30, 3:15	25
Live Web-Cam from Australia's Shark Alley	11:30, 2:30	50
Touch Tank Classroom	10:00, 11:30, 1:30, 3:00	45

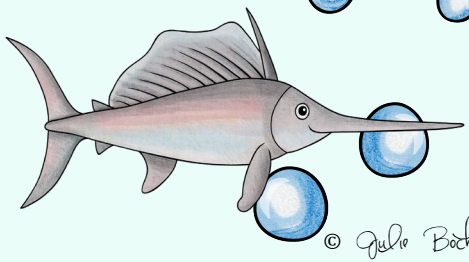






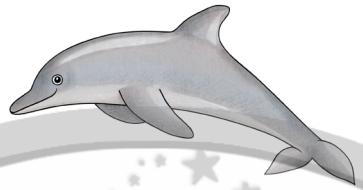


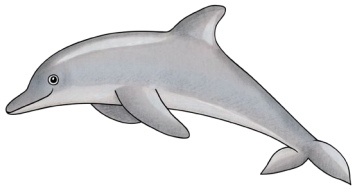




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DOLPHIN DISCOVERY- 1



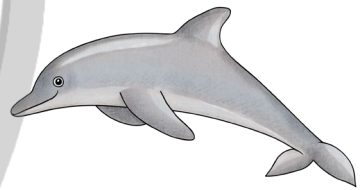


Solve the word problems below.

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 8 years old. Complete the In/Out machine to help you find out how old Ziggy is now.

IN AND OUT MACHINE								
Millie's Age	9	10	15	19	23	27	31	39	42
Ziggy's Age	1			11					

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 54 years old?

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

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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	28	49	42	17	23	39	43	37



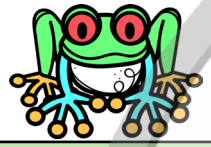


	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
KING																									
MACARONI																									
CHINSTRAP																									
ROCKHOPPER																									
LITTLE BLUE																									
GENTOO																									
ADELIE																									
EMPEROR																									
ROYAL																									
GALAPAGOS																									

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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. One of the more exciting experiences is seeing 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)	1.25 feet	0.75 feet	0.5 feet	1.5 feet	3.0 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 Red Eyed Tree Frog and the Blue Dart 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 Cuban Tree Frog jump? Show how you know.

4. How many jumps does a Red Eyed Tree Frog take to go the same distance a Goliath 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 4.25 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 6.75 pounds of raw tuna for his first and last meals and 5.25 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
10% DONATION TO THE CORAL REEF ALLIANCE				
DONATION ROUNDED TO THE NEAREST TENTH				

1. Calculate the amount of money that will be donated each week in the month of June.

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

3. Round the amount of money donated each week to the nearest tenth. Write the numbers in the table.

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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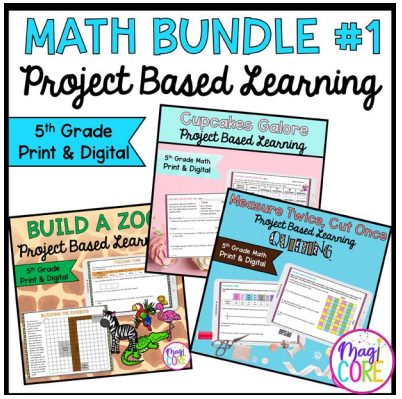
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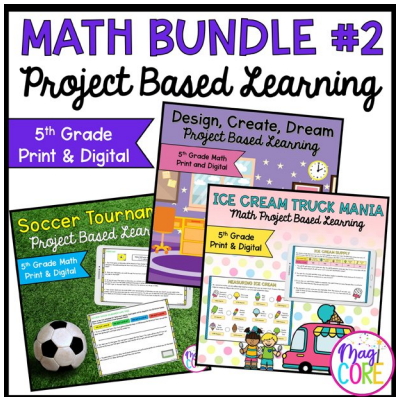
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