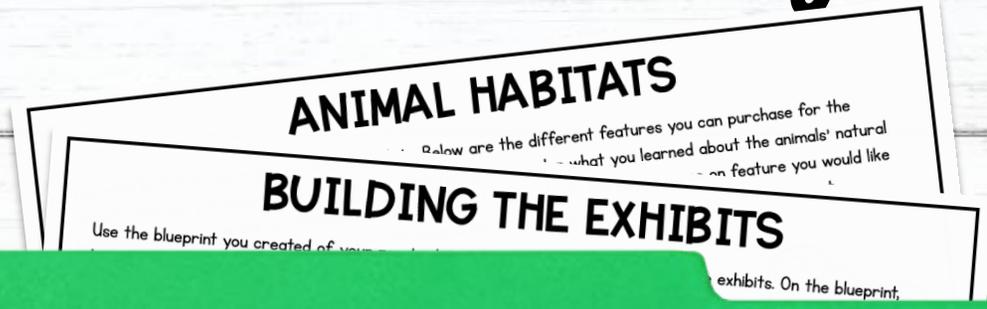


# BUILD A ZOO

## Project Based Learning

4th Grade  
Print & Digital



### BUILDING THE EXHIBITS

Now that you've chosen your 4 animals, you must build their exhibits. On this blueprint of the zoo, each square represents an area that is 10 feet by 10 feet. Consider how large each animal is, how many of each animal you anticipate placing in each exhibit, and how much space they need to live comfortably. Draw and shade the exhibit for each of your 4 animals. Label each animal exhibit.

									Restrooms





# Aligned to Math Standards



## CHALLENGE #1: SNAKE LENGTHS

Your zoo is a huge success! You expand by building a reptile house. Your zookeepers take excellent care of the snakes in the reptile house by measuring them to make sure they are a healthy size. Compare the lengths of the snakes below. Write the correct symbol  $<$ ,  $>$ , or  $=$  in the blank.

1.

Olive Python  
 $13 \frac{1}{2}$  feet



Black Mamba  
 $13 \frac{3}{4}$  feet

3.

Tiger Snake  
 $3 \frac{2}{5}$  feet



Eastern  
Kingsnake  
 $3 \frac{1}{4}$  feet

5.

Milk Snake  
 $7 \frac{6}{7}$  feet



Gabon  
Viper  
7 feet

2.

Northern  
Copperhead  
 $2 \frac{1}{4}$  feet



Pigmy  
Rattlesnake  
 $2 \frac{1}{3}$  feet



## CHALLENGE #1: SNAKE LENGTHS

Your zoo is a huge success! You expand by building a reptile house. Your zookeepers take excellent care of the snakes in the reptile house by measuring them to make sure they are a healthy size. Compare the lengths of the snakes below. Drag the correct symbol  $<$ ,  $>$ , or  $=$  from the bottom of the slide into the blank.

1.

Olive Python  
 $13 \frac{1}{2}$  feet



Black Mamba  
 $13 \frac{3}{4}$  feet

2.

Northern  
Copperhead  
 $2 \frac{2}{9}$  feet



Pigmy  
Rattlesnake  
 $2 \frac{1}{3}$  feet

3.

Tiger Snake  
 $3 \frac{2}{5}$  feet



Eastern  
Kingsnake  
 $3 \frac{1}{4}$  feet

4.

Anaconda  
 $11 \frac{2}{3}$  feet



Reticulated  
Python  
 $11 \frac{4}{6}$  feet

5.

Milk Snake  
 $7 \frac{6}{7}$  feet



Gabon Viper  
 $7 \frac{1}{2}$  feet

6.

Papua Python  
 $10 \frac{5}{8}$  feet



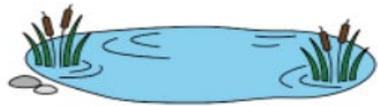
Boa  
Constrictor  
 $10 \frac{3}{4}$  feet



# Interactive Elements

## ANIMAL HABITATS

You have \$10,000 to decorate the animal exhibits. Below are the different features you can purchase for the exhibits. You can purchase more than one of each feature. Consider what you learned about the animals' natural habitats, how much space is within each exhibit, and the budget. Drag an animal icon to each feature you would like in their exhibit. On the following slide you will make a list of features to purchase and calculate the cost.



Watering hole  
\$1,000



Colorful plants  
\$200



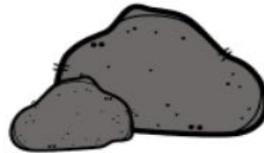
Sand  
\$240



Bush  
\$350



Tree  
\$650



Climbing rocks  
\$575



Tall grass  
\$480



Tree trunk  
\$250



Hanging vine  
\$100



Short grass  
\$325

Drag me



© Julie Becker

# Realistic Scenarios



## FEEDING TIME

With the animals settled in their new exhibits, it is mealtime at the zoo! You want to ensure that each animal's diet is the same as what they might eat in the wild. Research what each type of animal typically eats so that you know what type of food to buy. Take notes on what you learn.

ANIMAL #1

ANIMAL #2



ANIMAL #3

ANIMAL #4



© Gail Barber

## FEEDING TIME

The table below shows how much food one of each type of animal is fed per day. Use the data from the table to answer the questions.

ANIMAL	Zebra	Giraffe	Lion	Flamingo	Gorilla	Crocodile
FOOD CONSUMED PER DAY	24 lbs.	72 lbs.	13 lbs.	1 ½ lb.	68 lbs.	2 ¼ lbs.

- How much does a giraffe eat in one week? Use the box method of multiplication to show your thinking.
- How much more does a gorilla eat in one week than a zebra?
- If the lions' meat costs \$26 a pound, how much would it cost to feed one lion for a week?



© Gail Barber

# Challenge Activities for Differentiation

## CHALLENGE #3: PRIMATE BABIES

You just built a new primate exhibit, and several species of monkeys had babies! The zookeepers weighed the babies when they were one week old, and the data is on the clipboard below. Use the data to create a line plot showing primate baby weights. Draw an X to plot the data. Then, answer the questions.

Monkey	Weight (lbs)
Tamarin	1 1/8
Howler	1 3/4
Proboscis	2
Macaque	1 1/8
Marmoset	1 1/8
Baboon	1 3/4
Mandrill	1 3/4
Capuchin	1 1/4

Number of monkeys

← 1 1/4

1. What is the difference in weight between the heaviest

2. What is the combined weight of all the monkey babies

3. After one week, all the monkeys have gained 8 ounces

## CHALLENGE #3: PRIMATE BABIES

To raise money to protect endangered primates in the wild, you place a donation box near the exhibits of the primate babies. The amount of money you raised each month is below.

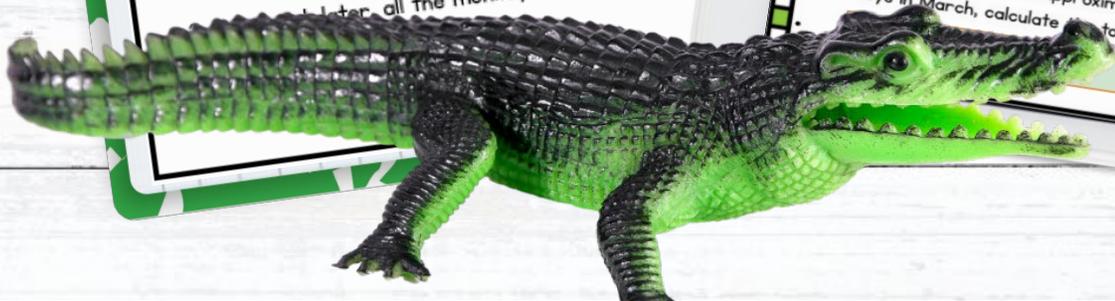
September	October	November	December	January	February
\$2,067	\$1,773	\$1,942	\$2,285	\$1,528	\$1,206

4. Round each monthly amount to the nearest hundred.

5. Was more money raised from September to November or from December to February? Determine the difference in the amount of money raised.

6. The zoo was only open on weekends in January. If there were 8 weekend days in January and an equal amount of money was raised each day, how much money was donated each day in January?

7. In March, there was approximately \$59 in the donation box at the end of each day. If there are 31 days in March, calculate the total amount donated.



Applicable to Real  
World & Fun!

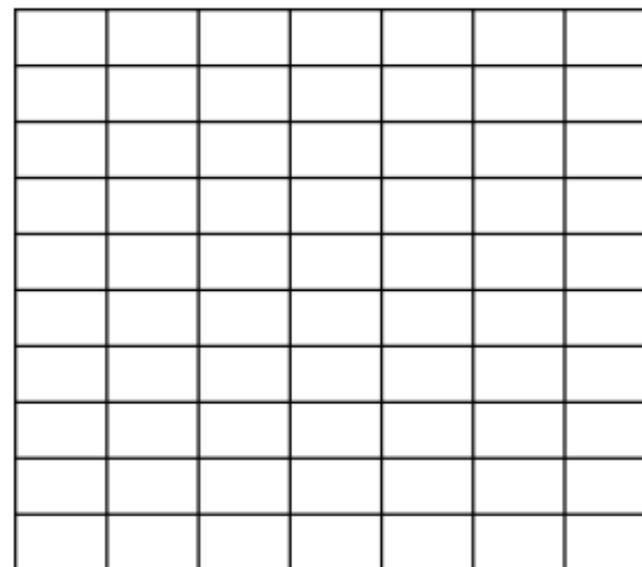
## ZOO ATTENDANCE

The clipboard below shows how many people were in attendance at the zoo last week. Plot the data on the bar graph below by coloring each bar a different color. Label all necessary parts.



Day	# of People at Zoo
Sunday	190
Monday	110
Tuesday	140
Wednesday	130
Thursday	150
Friday	160
Saturday	200

y-axis label



No Prep!  
Print and Go!

## BUILDING THE EXHIBITS

Use the blueprint you created of your zoo to complete the table with information about each animal exhibit.

Animal	Exhibit Area (in sq. ft.)	Exhibit Perimeter (in ft.)

1. Show the multiplication you used to find the area of one of your exhibits.

2. How did you calculate the perimeter of each exhibit? Explain.



© Julie Becken

# Student Self-Reflection

## 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?

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### RATE THIS

Circle the statement y

I am ready for something harder. This wo

## SELF EVALUATION

Drag the circle to 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

# TABLE OF CONTENTS

1. Teacher and Student Directions
2. Choose Your Animals
3. Build the Exhibits
4. Animal Habitats
5. Feeding Time
6. Zoo Brochure
7. Zoo Attendance
8. Challenge #1 Snake Lengths
9. Challenge #2 Snack Stand
10. Challenge #3 Primate Babies
11. Self Reflection and Rubric



THANK YOU FOR  
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requires that you make a copy of the  
resource to your own Google Drive.

# FOR THE TEACHER

**BUILD A ZOO** is a project-based learning task that involves using fourth grade math standards to solve problems related to building and maintaining a zoo. It is created for students in fourth grade. The following standards are addressed:

- 4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations.
- 4.NBT.A.2 Compare two multi-digit numbers based on meanings of the digits in each 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.
- 4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.
- 4.NF.A.2 Compare two fractions with different numerators and different denominators.
- 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.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

## 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-evaluation reflection and evaluation rubric.
6. Allow students an opportunity to share their completed projects..

# BUILD A ZOO

You have decided to open a zoo! It is your job to choose the animals in your zoo, build and design thoughtful enclosures for your animals to live in, keep your animals happy and healthy, and attract visitors to your zoo!

## Here are your tasks:

- Read through the entire packet before beginning.
- Choose the animals for your zoo.
- Create a blueprint of your zoo.
- Calculate the area and perimeter of the animal exhibits.
- Research and learn about your animals' natural habitats.
- Recreate the animal habitats in the exhibits following a budget.
- Research animal feeding habits in the wild.
- Calculate how much food will be required to feed your animals.
- Write a blurb for a brochure promoting your zoo and persuading people to visit.
- Calculate profits for your zoo based on tickets sold .
- Interpret data about zoo attendance.
- (Optional) Complete the challenge pages.
- Complete the self-reflection and evaluation rubric.

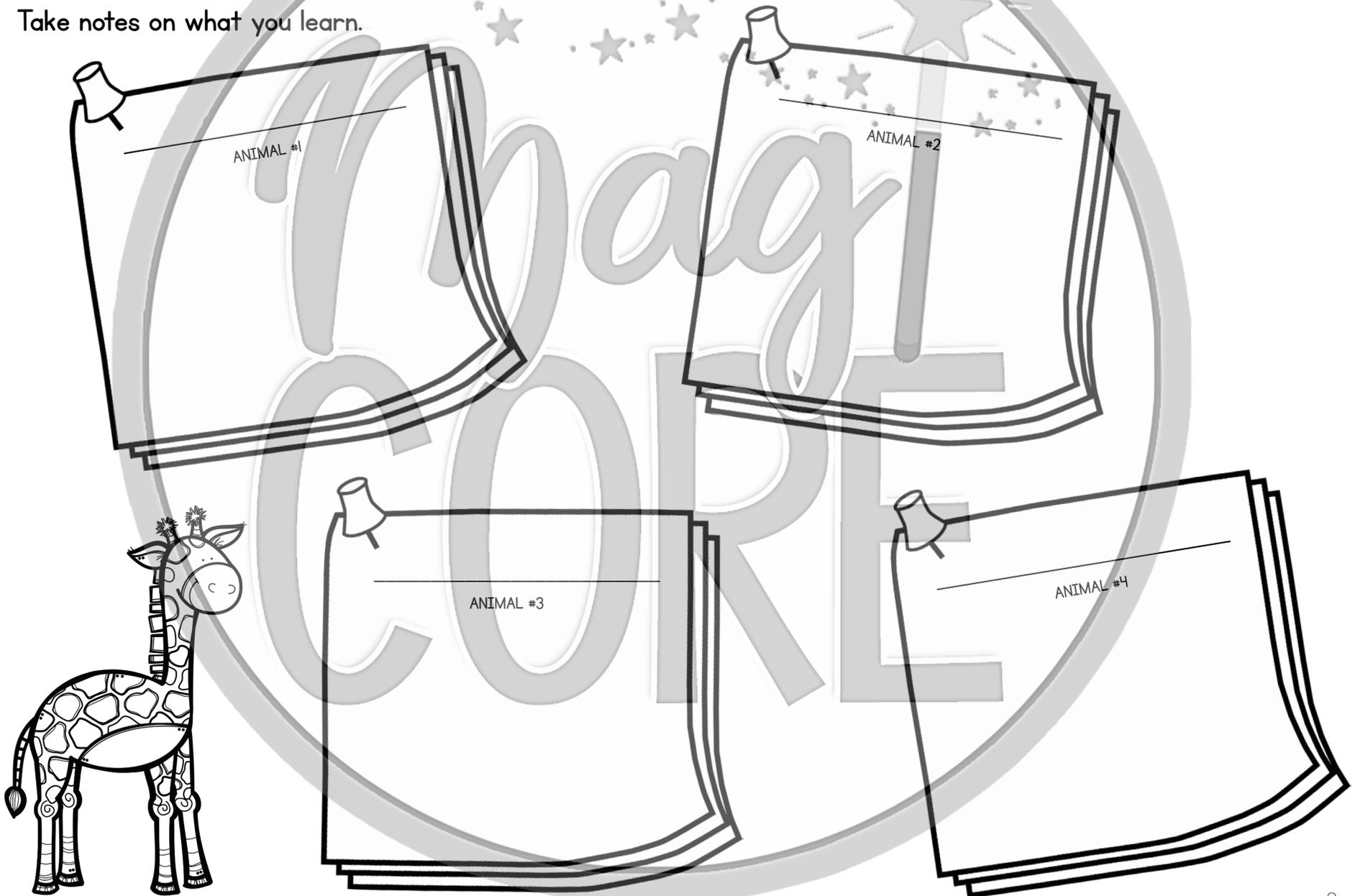
# CHOOSING YOUR ANIMALS

Your first step is to choose which animals to feature in your zoo. Below are six animal types you can choose from. Think of pros and cons of including each animal type in your zoo. For example, you might consider if an animal will be exciting to visitors, or how difficult it might be to care for that type of animal. After weighing your options, choose 4 types of animal for your zoo. Circle the animals you chose.

Animal	Pros	Cons
Gorilla 		
Zebra 		
Giraffe 		
Crocodile 		
Flamingo 		
Lion 		

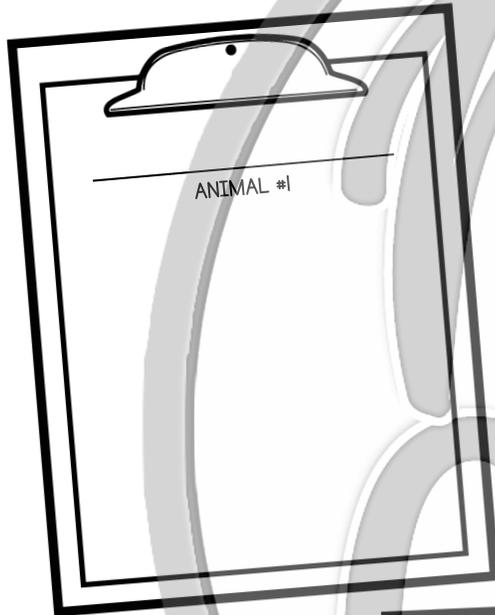
# ANIMAL HABITATS

Now that the animal exhibits have been built, it is time to decorate them. You want to make each exhibit resemble the animals' natural habitat as closely as possible. Research in which type of habitat each animal lives in the wild. Take notes on what you learn.

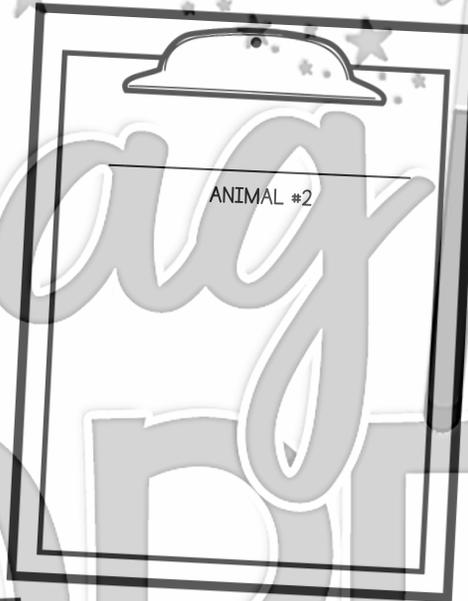


# FEEDING TIME

With the animals settled in their new exhibits, it is mealtime at the zoo! You want to ensure that each animal's diet is the same as what they might eat in the wild. Research what each type of animal typically eats so that you know what type of food to buy. Take notes on what you learn.



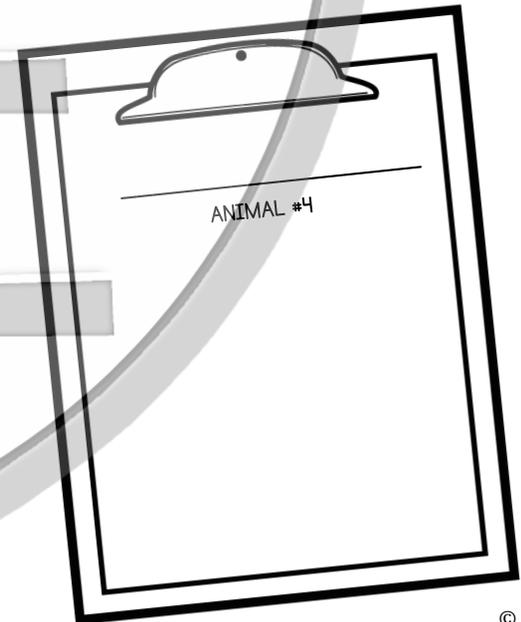
ANIMAL #1



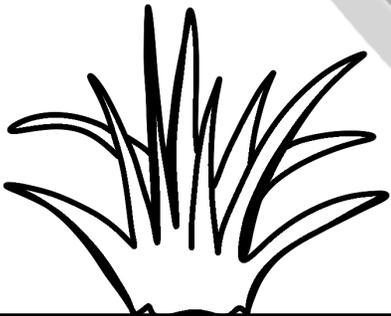
ANIMAL #2



ANIMAL #3



ANIMAL #4



# ZOO ATTENDANCE

The table below shows the price of admission to your zoo. Use the information in the table to answer the questions.

TICKET TYPE	Senior Citizen (65+ years)	Adult (18-64 years)	Child (2-17 years)	Baby (0-1 years)
TICKET PRICE	\$6	\$8	\$3	Free

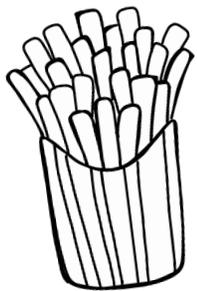
1. The Johansen family wants to go to the zoo. The family consists of Grandma (68 years old), Mom (38), Dad (39), Michael (8), Lara (4), and Rowan (1). They have a coupon for half off the price of admission. How much will the Johansens spend on tickets?
2. On a typical day, the zoo sells 75 adult tickets. How much money does the zoo make from adult tickets on a usual day? Use the standard algorithm to show your thinking.
3. On Wednesday, the zoo sold 62 senior citizen tickets, 78 adult tickets, 94 child tickets, and 42 baby tickets. How much money did the zoo earn from tickets on Wednesday?

# CHALLENGE #2: SNACK STAND



4. It's time to refill the soda machine. You can buy soda refills from your snack supplier for \$0.40 per liter or \$0.25 per 500 milliliters. Which option has the better price? Explain how you know.

5. You add French fries to the snack stand menu. To make the French fries, you purchase 8 kilograms of potatoes. Each individual French fry weighs about 9 grams. About how many French fries can you make from the potatoes you purchased?



6. It takes  $3\frac{3}{4}$  minutes to fry each batch of French fries. How long will it take to fry 6 batches?



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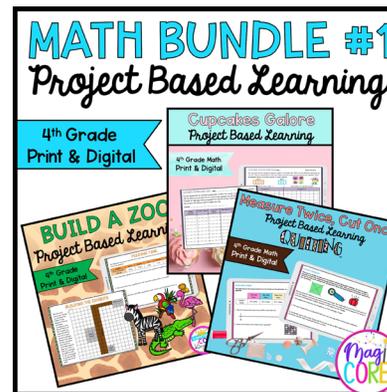
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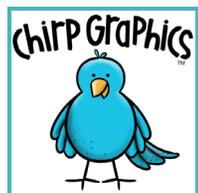


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