

# BUILD A ZOO

## Project Based Learning

3<sup>rd</sup> Grade  
Print & Digital



### ANIMAL HABITATS

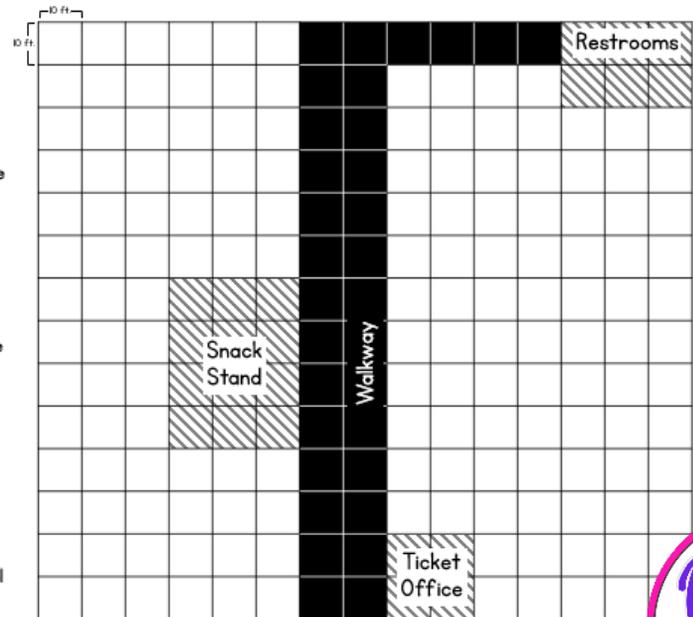
Below are the different features you can purchase for the zoo. Write down what you learned about the animals' natural habitats. Which feature would you like to include in your zoo?

### BUILDING THE EXHIBITS

Use the blueprint you created of your zoo to build the exhibits. On the blueprint, draw the exhibit for each animal.

### 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.





# Aligned to Math Standards

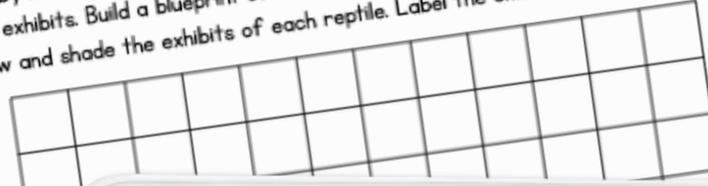


## CHALLENGE #1: REPTILE HOUSE



Your zoo is a huge success! You want to expand by building a reptile house. Your zookeepers have given you strict instructions about requirements for the reptile exhibits. Build a blueprint of the reptile house below. Each square represents an area that is 1 foot by 1 foot. Draw and shade the exhibits of each reptile. Label the exhibits.

1. The boa constrictor exhibit needs to be 25 square feet. It must be a square.
2. The two-horned chameleon and the Asian box turtle both need exhibits with areas of 12 square feet, but they must have different perimeters.
3. Each Fire-bellied toad needs 2 square feet of space in the exhibit. You have 4 Fire-bellied toads inside the exhibit.
4. The perimeter of the poison dart frog exhibit must be 14 feet.
5. The Borneo python must be in an exhibit that is in the shape of an "L." It must have an area greater than 18 square feet.

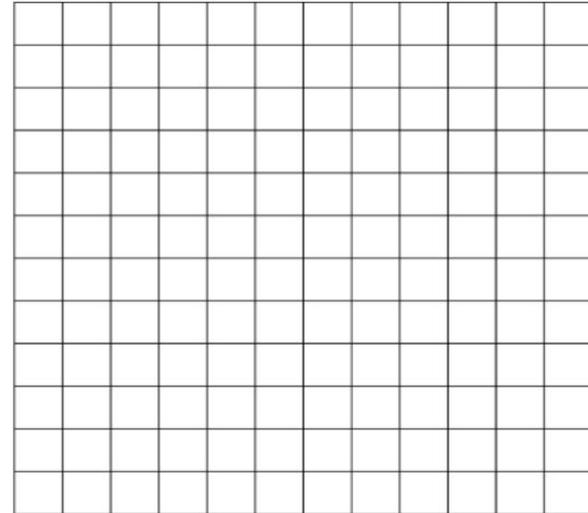


## CHALLENGE #1: REPTILE HOUSE



Your zoo is a huge success! You want to expand by building a reptile house. Your zookeepers have given you strict instructions about requirements for the reptile exhibits. Build a blueprint of the reptile house below. Each square represents an area that is 1 foot by 1 foot. Use the shape  or line  tools to draw the exhibits of each reptile. Use the textbox tool  to label the exhibits.

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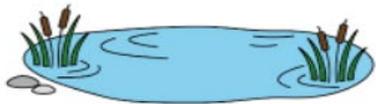


SAMSUNG

# 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



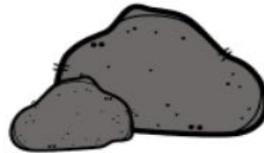
Sand  
\$240



Bush  
\$350



Tree  
\$650



Climbing rocks  
\$575



Tall grass  
\$480



Tree trunk  
\$250



Hanging vine  
\$100



Short grass  
\$325

Drag me



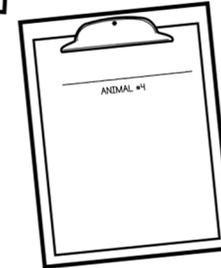
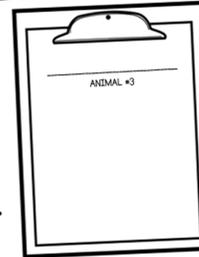
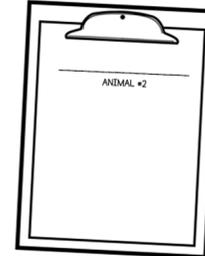
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# Realistic Scenarios



## 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.



© Julie Barber

## FEEDING TIME

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

ANIMAL	Zebra	Giraffe	Lion	Flamingo	Gorilla	Crocodile
FOOD CONSUMED PER DAY	20 lbs.	70 lbs.	10 lbs.	1 lb.	60 lbs.	2 lbs.

- How much does a giraffe eat in one week? Draw a model to show your thinking.
- How much more does a gorilla eat in one week than a zebra eats in one week?
- If meat for the lions costs \$20 a pound, how much would it cost to feed one lion for a week?



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# Challenge Activities for Differentiation

## CHALLENGE #2: SNACK STAND

One of the ways you earn money at your zoo and keep your visitors happy is by running a snack stand. The menu for the snack stand is below. Answer the questions.

Soda.....	\$2
Hotdog.....	\$3
Popcorn.....	\$1.50
Pretzel.....	\$2.25
Popsicle.....	\$1

1. It costs the zoo \$1 to buy each hotdog. The hotdogs come in packages of 10. How much profit does the zoo make from the hotdog supplier per package of hotdogs?

2. In one hour, the snack stand sells 100 popsicles. How many packages of popsicles should you order? Draw a diagram to show your work.

3. To attract more people to the snack stand, you offer a deal where a hotdog and a pretzel together for \$3. If 5 people purchase this deal, how much less money did the snack stand earn than if they had bought the items separately?

## CHALLENGE #3: PRIMATE CLASSES

You just built a new primate exhibit, and you want to offer classes to your visitors so they can learn about the monkeys, gorillas, and chimpanzees while visiting the zoo. Use the schedule of the primate classes to answer the questions.

Class	Time
All About Apes	12:30
Primate Diets	2:15
Monkey Habitats	3:05

1. The All About Apes class lasts 50 minutes. What time does the class end? Use the number line to show your math. Drag the vertical lines to partition the number line, the text box to label partitions, and the hops to show elapsed time.

2. The Monkey Habitats class ends at 4:25. How long is the class?

3. Primate Diets is 55 minutes long. Can the same zookeeper teach the Primate Diets class and the Monkey Habitats class? Explain why or why not.



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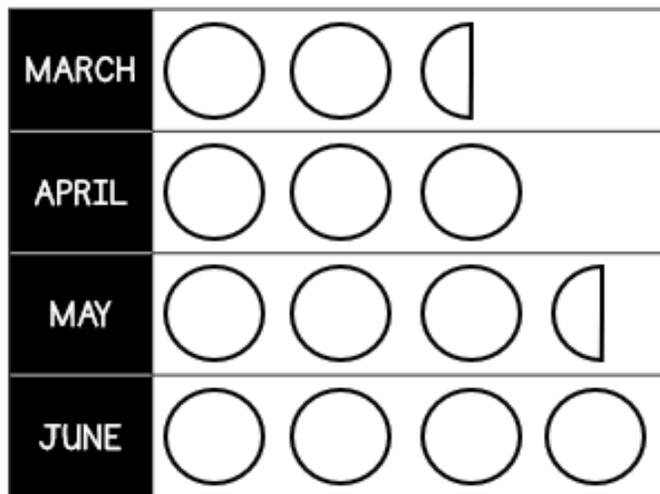


# Applicable to Real World & Fun!

## ZOO ATTENDANCE

The pictograph below shows how many people visited the zoo each month during the spring. Use the information on the pictograph to answer the questions.

NUMBER OF VISITORS AT THE ZOO



 = 600 people

- How many more people visited the zoo in May than in March?
- If 2,680 people visited the zoo in July, how many fewer visitors were there in June?
- How many people visited the zoo in total this spring?

No Prep!  
Print and Go!

## BUILDING THE EXHIBITS

3. Use multiplication to find the area of the snack stand.
4. You decide you need to build a zookeeper's hut in the bottom left corner of the blueprint. The zookeeper's hut will have an area of 600 square feet. What might the perimeter of the hut be? Draw a diagram.
5. Building the zookeeper's hut in the bottom left corner of the blueprint will take away some space from one of the animal exhibits. How can you use subtraction to find out the new area of the affected animal exhibit? Calculate the new area of the exhibit after building the hut.



# 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 (area and perimeter)
4. Animal Habitats (research, science, money)
5. Feeding Time (research, science, multiplication, repeated addition and subtraction)
6. Zoo Brochure (writing)
7. Zoo Attendance (money word problems)
8. Challenge #1 Reptile House (area and perimeter)
9. Challenge #2 Snack Stand (money word problems)
10. Challenge #3 Primate Classes (Schedule and Time)
11. Self Reflection and Rubric



THANK YOU FOR  
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RESOURCE!

The Google Slides version of this resource 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 third grade math standards to solve problems related to building and maintaining a zoo. It is created for students in third grade. The following standards are addressed:

- 3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10
- 3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes
- 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories
- 3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement
- 3.MD.C.6 Measure area by counting square units
- 3.MD.C.7. Relate area to the operations of multiplication and addition
- 3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons

## 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 extra challenge activities (optional).
5. Students will 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.

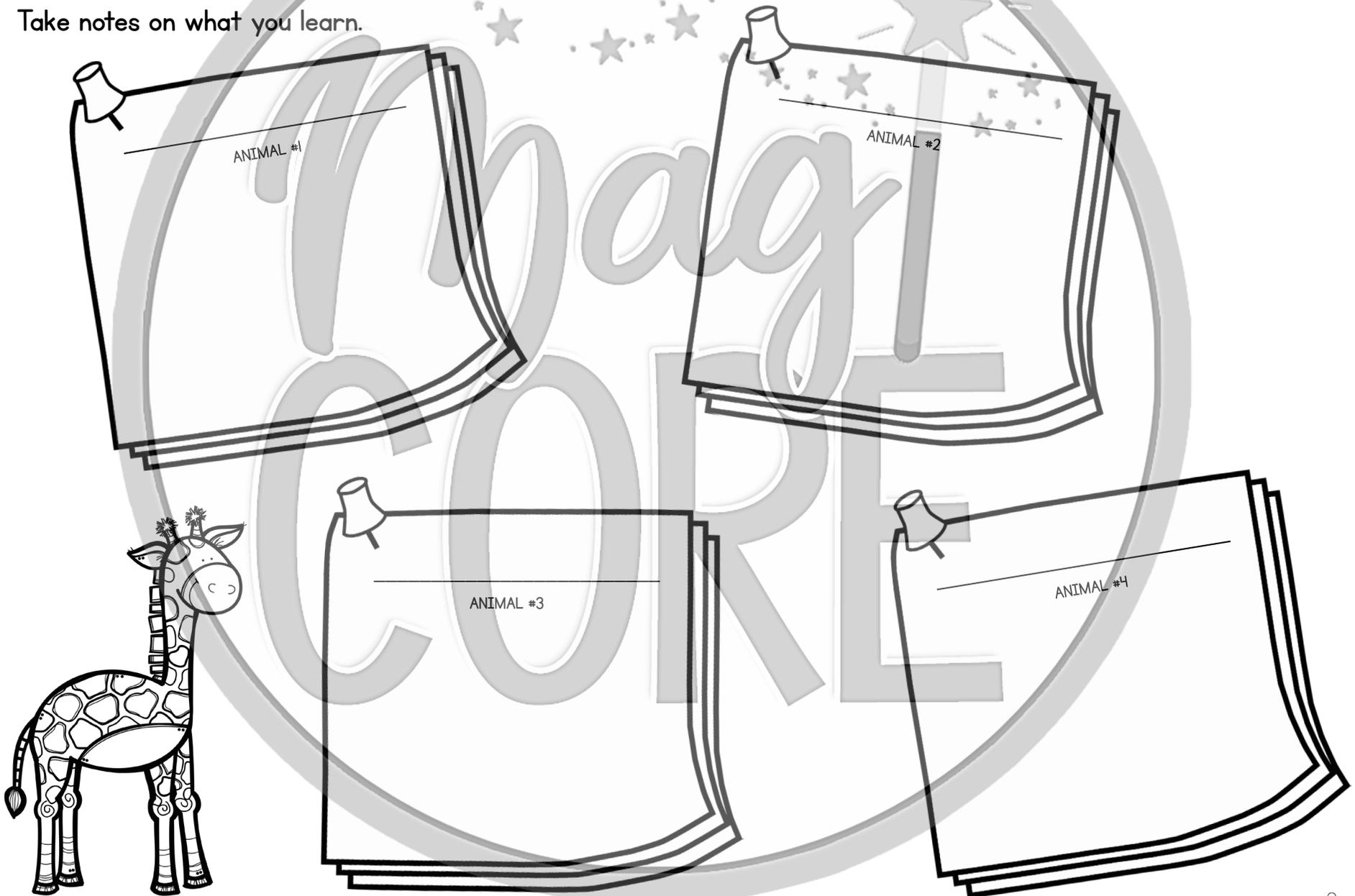
# CHOOSING YOUR ANIMALS

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

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

ANIMAL	Zebra	Giraffe	Lion	Flamingo	Gorilla	Crocodile
FOOD CONSUMED PER DAY	20 lbs.	70 lbs.	10 lbs.	1 lb.	60 lbs.	2 lbs.

1. How much does a giraffe eat in one week? Draw a model to show your thinking.
2. How much more does a gorilla eat in one week than a zebra eats in one week?
3. If meat for the lions costs \$20 a pound, how much would it cost to feed one lion for a week?



# ZOO BROCHURE

Now that your zoo is open, you need to attract visitors! You are going to publish a brochure to entice people to come to your zoo. Below, write a blurb to include in the brochure. Your goal is to make people want to come visit your zoo.



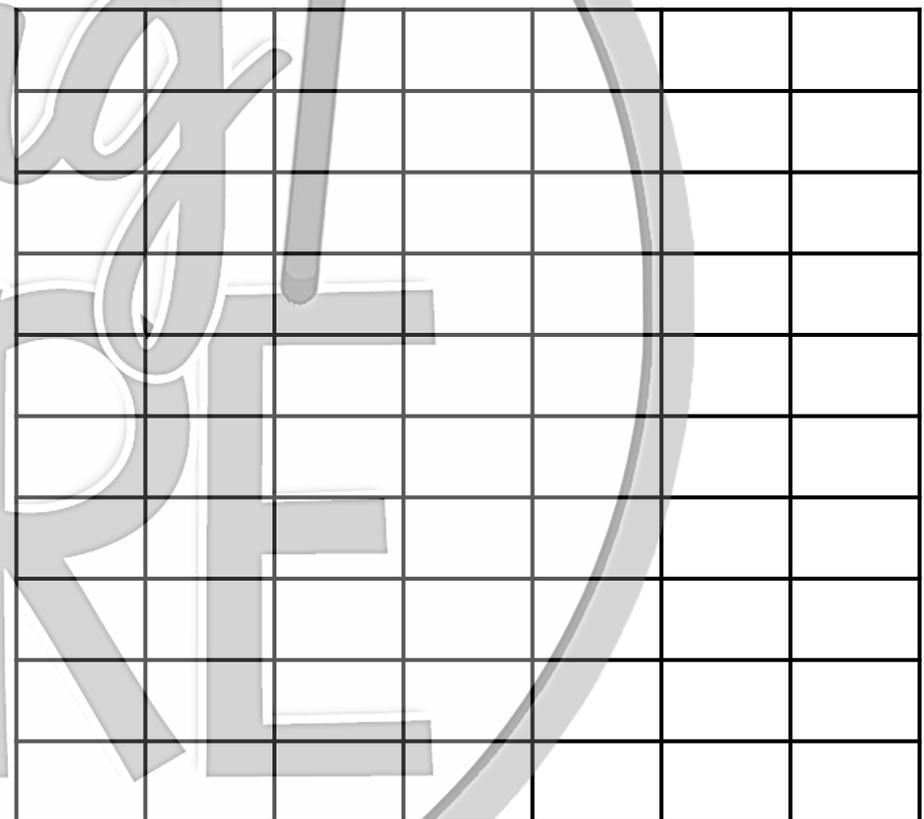
Magi  
CORE

# 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



# CHALLENGE #2: SNACK STAND

One of the ways you earn money at your zoo and keep your visitors happy is by running a snack stand. The menu for the snack stand is below. Answer the questions.



Soda.....	\$2
Hotdog.....	\$3
Popcorn.....	\$1.50
Pretzel.....	\$2.25
Popsicle.....	\$1

1. It costs the zoo \$1 to buy each hotdog from the hotdog supplier. The hotdogs come in packages of 24. What is the zoo's profit per package of hotdogs?

2. In one hour, the snack stand earned \$85 from selling soda and popsicles. How many sodas and popsicles could they have sold? Draw a diagram to show your thinking.

3. To attract more people to the snack stand, you offer a special deal where visitors can buy a popcorn and a pretzel together for \$3. If 5 people purchase popcorn and pretzels using this deal, how much less money did the snack stand earn than if they didn't offer the deal?

# CHALLENGE #3: PRIMATE CLASSES

The primate classes are so popular that you decide to offer classes about other types of animals, too. Make a schedule of classes by choosing in which order you want the classes to take place.

1. Cut out classes below and paste them in the desired order on the schedule on the following page.
2. Calculate and record the end time for the first class using the start time and duration.
3. For the second class, the start time is the same as the end time of the previous class. Repeat the steps above.
4. Continue calculating start and end times for all classes until you reach the end of the schedule. If you calculated correctly, the last class should end at 4 pm!

	<b>Nocturnal Critters</b> 40 minutes 	<b>What's it like to be a Zookeeper?</b> 1 hour 10 minutes
	<b>Endangered Animals</b> 45 minutes	<b>Animals of the Arctic</b> 55 minutes 
	<b>Our Penguin Pals</b> 1 hour 5 minutes 	<b>Big Cats</b> 50 minutes 
	<b>Tropical Bird Talk</b> 35 minutes	<b>Adorable Animal Babies</b> 30 minutes



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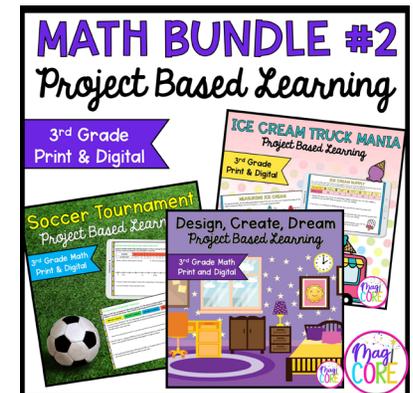
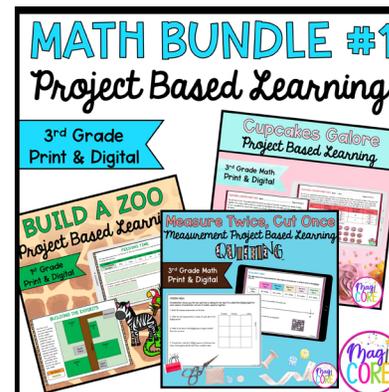
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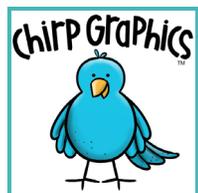


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