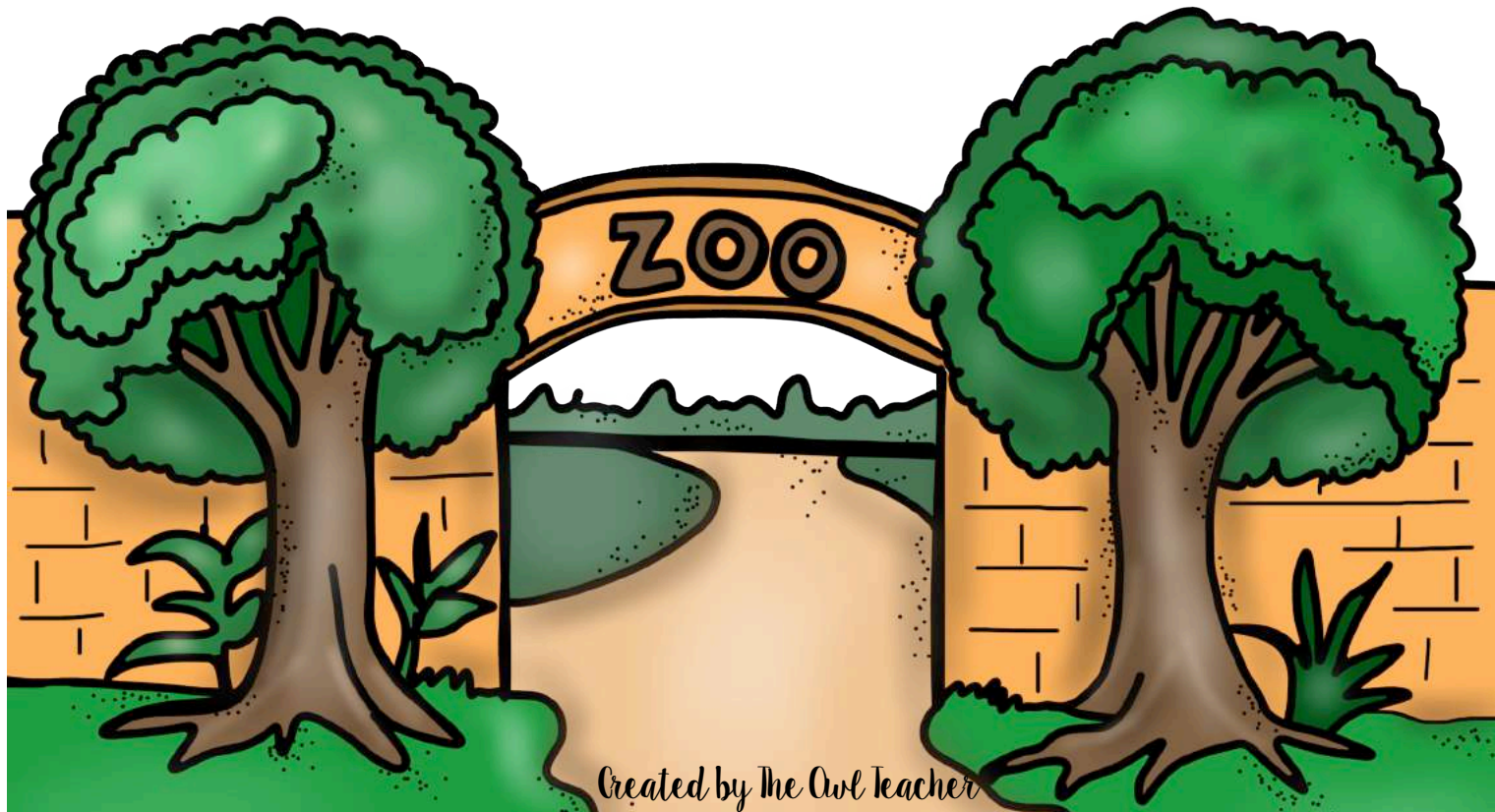


# Design an Eco-Explorer Zoo

A **Project Based Learning** Activity with a focus on  
Ecosystems, Animals, Perimeter, and Area



This is an exciting **project based learning** project for second through fifth graders about **ecosystems**, but could also be used for **animals**. This project has complete materials to for both topics, therefore students can pick one or the other, or both! The sheets are labeled across the top for ease and for extra fun, have half the class research animals, while the other half research ecosystems!

This packet meets the NGSS Standards!

In this adventure, students are introduced to Mayor Conservation and his need to build an Eco-Explorer Zoo. His idea is to create a zoo that has each of the ecosystems of the world in his town, but since he doesn't know much about ecosystems, he needs to enlist your students' help.

Additionally, he needs to fill each ecosystem with the native animals and plants! He's really confused on how any plant or animal could possibly have adapted to living in such environments (especially ecosystems like the tundra or the desert!)

**\*\*There is only a slight amount of adaptation addressed in this packet.\*\***

Students are given a mission and work through several steps to complete an ecosystem zoo that involves researching an ecosystem and/or a particular animal, completing a knowledge survey to get their “license” ...

## Design an Eco-Explorer Zoo



Mayor Conservation needs help to design a new type of zoo. An Eco-Explorer Zoo!

There are so many ecosystems on the Earth, but many of them are difficult to see and are far away. Some ecosystems are even being destroyed. The townspeople have all started asking something, because they don't want to miss out on places in the world!

Mayor Conservation decided he was going to create these ecosystems from around the world in it, right in his town. Then all the townspeople can learn about and see it up close and personal.

Unfortunately Mayor Conservation doesn't know very much about ecosystems and needs someone to help him. You, who knows a lot about ecosystems and could help him.

Mayor Conservation wants to first check your qualifications. Help him determine what you know and what to study. If you really well, you will get your zoo building license.

Are you up for the challenge? Great! Let's get started!

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## Design an Eco-Explorer Zoo The Layout Plan

Before we can get started, Mayor Conservation wants you to see the layout plan. He has it all written out nicely for you below.

### Step 1: Research

You and your team will begin researching everything you need to know to make your Eco-Explorer Zoo a success. After all, you want to make Mayor Conservation proud!

### Step 2: Get Your License

As much as Mayor Conservation believes that you know your stuff, he can't just let anyone create a zoo all willy nilly. He needs to be positive you know it! The best way to show him that you are an expert is to get your license. Don't worry, it won't take long and then, you'll be off designing the plans!

### Step 3: Plan the Design

Now the fun part begins. You and your team of experts are going to begin designing the Eco-Explorer Zoo. You will decide where everything will go in the area that Mayor Conservation has provided you with.

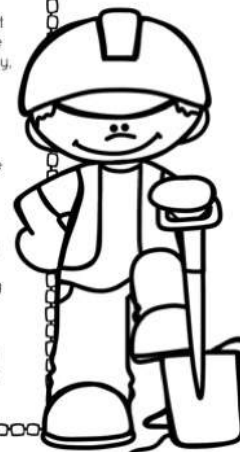
### Step 4: Create the Zoo (Model)

By this point you have completed a lot of work and Mayor Conservation, along with your teacher, have approved your plan to build the zoo! Now it is time to start building it! You and your team will create a scale model of your zoo using your plans from step 3.

### Step 5: Tour Guides

Now it's the final step. When people come to visit the zoo, the tour guides will need to tell everyone about that ecosystem. Create a brochure that will share the details of the ecosystem so the tour guide knows what to say.

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...designing both the zoo and the ecosystem. These pages allow for students to practice area, perimeter, and geometric shapes. It is further differentiated by having different grid sizes, having open ended choices for design, and much more! Students are given checklists and “measurement checkers.”

## Design an Eco-Explorer Zoo

### Step 3: Plan the Design

Step 3 - with parameters

#### Let's Start Planning!

You officially have the green light to begin planning the design of the new Eco-Explorer Zoo! Now the fun part begins. You will decide where everything will go on the land that Mayor Conservation has provided you with. Here is what he is going to need in the zoo:

- 4 Ecosystem Exhibits
- An Entrance
- 2 Snack Stands
- An Aquarium Exhibit
- 2 Restrooms
- A Gift Shop

He will need you to plan the layout. You can add more than what's above. When you are completely finished, take your measurements to make sure they

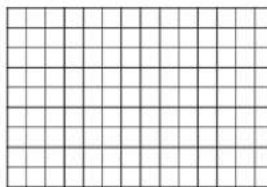


#### Design an Eco-Explorer Zoo Entire Zoo Blueprint

Sketch out your design of your Eco-Explorer Zoo below. Make sure to label each required part of the zoo. Make sure your lines are clear so that you can determine the specific dimensions of the area and perimeter of your buildings.

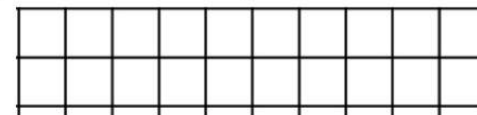
#### Requirements

- 4 Ecosystem Exhibits no smaller than 1000 meters<sup>2</sup>
- 1 Ecosystem Exhibit must be an Aquarium of at least 2000 meters<sup>2</sup>
- An Entrance no smaller than 800 meters<sup>2</sup>
- 2 Restrooms at least 900 meters<sup>2</sup> each



#### Zooming in on the Ecosystem Exhibits

Which ecosystem exhibit will this be?

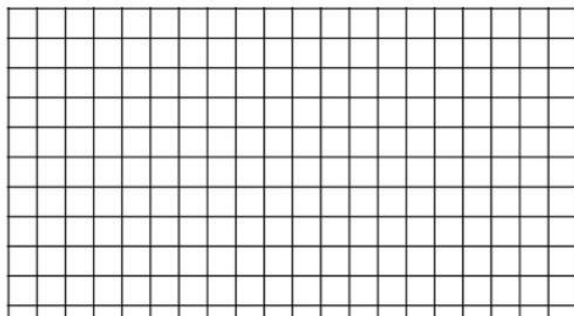


#### Design an Eco-Explorer Zoo Entire Zoo Blueprint

Sketch out your design of your Eco-Explorer Zoo below. Make sure to label each required part of the zoo. Make sure your lines are clear so that you can determine the specific dimensions of the area and perimeter of your buildings.

#### Requirements

- 4 Ecosystem Exhibits no smaller than 1000 meters<sup>2</sup>
- 1 Ecosystem Exhibit must be an Aquarium of at least 2000 meters<sup>2</sup>
- An Entrance no smaller than 800 meters<sup>2</sup>
- 2 Restrooms at least 900 meters<sup>2</sup> each
- 2 Snack Stands at least 400 meters<sup>2</sup> each
- A Gift Shop that is no less than 900 squared meters
- Walkways



This is where you will plan the inside of exhibit. But first I need to know which exhibit I will be building. The line.

get started determine the exhibit. He is exhibit the animals and other vegetation. veterinarian work. in add more, but at the animals need. bel each thing you color for app. = 100 m<sup>2</sup>

## Design an Eco-Explorer Zoo

### Step 3: Plan the Design

Step 3 Geometry and With Parameters Zoo

#### Zoo Requirements

- 4 Ecosystem Exhibits of 1000 meters<sup>2</sup> each
- 1 Ecosystem Exhibit must be an Aquarium of 2000 meters<sup>2</sup>
- An Entrance of 800 meters<sup>2</sup>
- 2 Restrooms at 900 meters<sup>2</sup> each
- 2 Snack Stands at 400 meters<sup>2</sup> each
- A Gift Shop that is 900 squared meters

#### Geometry Requirements

- hexagon(s)
- quadrilateral(s)
- rectangle(s)
- square(s)
- parallelogram(s)
- triangle(s)

## Design an Eco-Explorer Zoo

### Checking Measurements

Step 3 Open

Name \_\_\_\_\_

Entire Zoo Blueprint

Fill in the chart below using the requirements from the Entire Zoo Blueprint Grid.

Requirement	Side 1	Side 2	Perimeter	Area
Ecosystem Exhibit 1				
Ecosystem Exhibit 2				
Ecosystem Exhibit 3				
Ecosystem Exhibit 4				
Aquarium Exhibit				
Entrance				
Restroom 1				
Restroom 2				
Snack Stand 1				

After students plan their design and it's approved, they begin building their ecosystem and bring it together with their group to build the entire zoo. Students who are just researching an animal, will simply put together the zoo and add their animals in with their group. Students practice creating scale models and watch their blueprints come to life!

Step 4 Animal

### Design an Eco-Explorer Zoo


#### Step 4: Create the Zoo Plans

**Let's Get Building!**

You have completed a lot of work and Mayor Conservation, along with your teacher, have approved your design. Now it is time to start building it! You will use your plans of your zoo from step 3 along with the construction materials you have to create a model of your entire zoo. Don't forget to include your animal.

Remember to include everything that you placed in your plans and that the dimensions match, but at a scaled size.

This may take you a few days to create. That's normal. Make sure that your model is sturdy to carry and placed in a safe place when you aren't working on it. Also, don't forget your name.



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Step 4 Ecosystem

### Design an Eco-Explorer Zoo

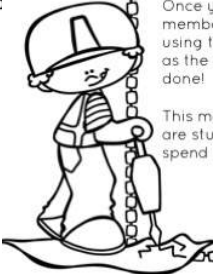
#### Step 4: Create the Ecosystem Plans

**Let's Get Building!**

You have completed a lot of work and Mayor Conservation, along with your teacher, have approved your design. Now it is time to start building it! You will use your plans of your ecosystem from step 3 along with the construction materials you have to create a model of your ecosystem.

Remember to include everything that you placed in your plans and that the dimensions match, but at a scaled size.

This may take you a while to create. That's normal. Make sure that all of your models are sturdy and placed in a safe place when you aren't working on it. You may need to spend some time outside of class working on it. Also, don't forget your names!



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### Design an Eco-Explorer Zoo

#### Step 4: Create the Ecosystem and Zoo Plans

**Let's Get Building!**

You have completed a lot of work and Mayor Conservation, along with your teacher, have approved your design. Now it is time to start building it! You will use your plans of your ecosystem from step 3 along with the construction materials you have to create a model of your ecosystem.

Remember to include everything that you placed in your plans and that the dimensions match, but at a scaled size.

**Putting It All Together**

Once you have completed your model of your ecosystem (and your other team members have too), then you will bring your models together to create your entire zoo using the Entire Zoo Blueprint Plans. You will need to create the additional items, such as the restrooms, entrance, and snack stands, but the hard part - the ecosystems - is done!

This may take you a while to create. That's normal. Make sure that all of your models are sturdy and placed in a safe place when you aren't working on it. You may need to spend some time outside of class working on it. Also, don't forget your names!

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Finally, before the big opening day of their Eco-Explorer Zoo, students will need to prepare something for the tour guide! The tour guide doesn't know anything about the animals or the ecosystem, so students have to quickly prepare a tour guide pamphlet for him or her.

Step 5 Ecosystem

## Design an Eco-explorer Zoo Step 5: Tour Guides

### It's Almost Opening Day!

It's almost opening day for our new Eco-Explorer Zoo! Mayor Conservation is excited and the town is buzzing all about it! However, the local tour guides that were hired to show people around are feeling really nervous.

Mayor Conservation overheard some of them talking about ecosystems or the animals in them. That's when he decided to give you a call. After all, he knows you are an expert!

Step 5 Animal

## Design an Eco-explorer Zoo Step 5: Tour Guides

### It's Almost Opening Day!

It's almost opening day for our new Eco-Explorer Zoo! Mayor Conservation is excited and the town is buzzing all about it! However, the local tour guides that were hired to show people around are feeling really nervous.

Mayor Conservation overheard some of them talking about how they don't know anything about ecosystems or the animals in them. That's when he decided to give you a call. After all, he knows you are an expert!

Since time is short and the doors will be opening very soon to let tourists in, Mayor Conservation has asked for you to create a brochure with all the essential information that the tour guide needs about the animals living in the ecosystems.

That would include:

- The characteristics of this animal and its life cycle
- What it normally eats and its place in the food chain/web
- Where it lives and what ecosystem it is in
- What its needs are and how it has adapted to meet those needs
- The threats this animal has (such as extinction) and how we can protect it
- Any interesting or special facts about it

Make sure that it is neat and easy to read. Include pictures and some color. If it's really nice, Mayor Conservation may even make copies for the local tourists!

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Rubrics are included to make grading easier!



# Rubrics are included to make grading easier!

ALL

## Eco-explorer Zoo Plan the Design Rubric

Name(s) \_\_\_\_\_

	Requirements	Sizes	Zoo Map Sketch	Zoom In Ecosystem Layout	Scale	Accuracy	Attractiveness
<b>3</b>	The blueprint has requirements labeled and clearly marked.	The student took into consideration the size of the requirements and the land.	The student completed a sketched zoo	The student considered the type of ecosystem	The student accurately created a scale model of the	The area and perimeter was accurate and	The plans are attractive and
<b>2</b>	The blueprint has most of the requirements labeled and/or clearly marked.	The student partially took into consideration the size of the requirements and/or the land.					
<b>1</b>	The blueprint has none of the requirements labeled and/or clearly marked.	The student did not take into consideration the size of the requirements and/or the land.					
Total Points: / 21 Comments:							

## Eco-explorer Zoo Tour Guide Rubric

Name \_\_\_\_\_

	Location in the World	Climate & Weather	Living Things in the Ecosystem	The Food Chain & Web	Threats & Changes to the Ecosystem	How to Protect the Ecosystem	Handwriting & Neatness
<b>3</b>	The location of the ecosystem in the world was described.	The climate and weather of the ecosystem was described.	The living things of the ecosystem, such as plants & animals, were described.	The food chain and web of the ecosystem was described.	The threats & changes that exist to the ecosystem	It was described on	The handwriting was neat.
<b>2</b>	The location of the ecosystem in the world was partially described.	The climate and/or weather of the ecosystem was partially described.	The living things of the ecosystem, such as plants & animals, were partially described.	The food chain and web of the ecosystem was partially described.			
<b>1</b>	The location of the ecosystem in the world was not described.	The climate and/or weather of the ecosystem was not described.	The living things of the ecosystem, such as plants & animals, were not described.	The food chain and web of the ecosystem was not described.			
Total Points: / 21 Comments:							

## Eco-explorer Zoo Create an Ecosystem Rubric

Name(s) \_\_\_\_\_

	Design	Scale Model	Dimensions	Focus	Exhibits	Accuracy	Attractiveness
<b>3</b>	The modeled ecosystem matches the blueprint design.	The scale model was accurate.	The dimensions on the blueprint match the model.	The time spent working on the model was focused and on task.	All of the required exhibits were included on the mapped out model.	All of the included requirements were correct.	The model is attractive and appealing.
<b>2</b>	The modeled ecosystem mostly matches the blueprint design.	The scale model was partially accurate.	The dimensions on the blueprint mostly match the model.	The time spent working on the model was mostly focused and on task.	Most of the required exhibits were included on the mapped out model.	Most of the requirements included were accurate.	The model is mostly attractive and appealing.
<b>1</b>	The modeled ecosystem does not match the blueprint design.	The scale model was not accurate.	The dimensions on the blueprint do not match the model.	The time spent working on the model was off task and not focused.	Only 3 or less of the exhibits were included on the mapped out model.	Three or fewer of the included requirements were accurate.	The model is sloppy and messy.
Total Points: / 21 Comments:							