



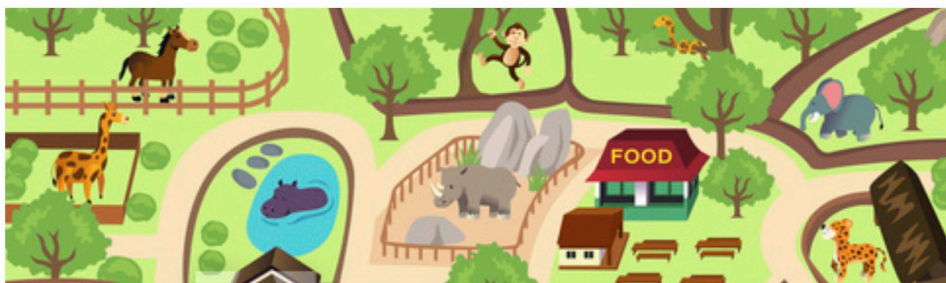
## **The Beardsley Zoo Re-Do**

Congratulations, you are hired as the engineer in charge of upgrading the world-famous Beardsley Zoo in Bridgeport, Connecticut! Your job is to redesign the animal enclosures to make sure that the animals are safe and happy and that visitors can enjoy seeing the animals safely as well.

The staff would like to keep the zoo open during the construction and can do one exhibit every week. They will give you one animal enclosure at a time to focus on.

Things to think about:

1. Animal should feel safe, so think about it's natural environment.
2. Animal should be happy and healthy so make sure there is a fun activity for exercise. This should include a simple machine.
3. Visitors should be able to safely see the animals. Create a space outside the enclosure where visitors can watch the animals
4. Be creative, be ready for mess-ups, have fun and be sure to share photos of your work with us at 3DuxDesign. The animals need you !!!





## The Beardsley Zoo Re-Do: The Emperor Penguin

Important Facts for your Design:

- The Emperor penguin is from Antarctica
- They are the only 4 feet tall (imagine a 6 year old person)
- They eat fish

The staff would like the visitors to be able to feed the penguins. Design a "Fish Frenzy Game". Build a fun and interactive activity where guests can catapult fish into the tank to feed the penguins. Use a lever.

1. Draw a sketch of your penguin next to a human. Try to make sure the sizes make sense

2. Draw a sketch of the enclosure, the activity (machine), and the water feature

3. Build your Project

4. Fun-tivity:

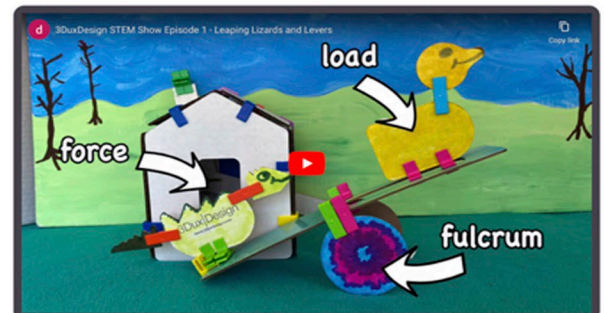
Take some cool photos from different angles and places.

Bird's eye view (from above)

Eye level level view (like you are a visitor standing on the ground)

Earthworm view (from below, like you are a worm lying on the ground)

Dont forget to share!!







## The Beardsley Zoo Re-Do: The Bengal Tiger

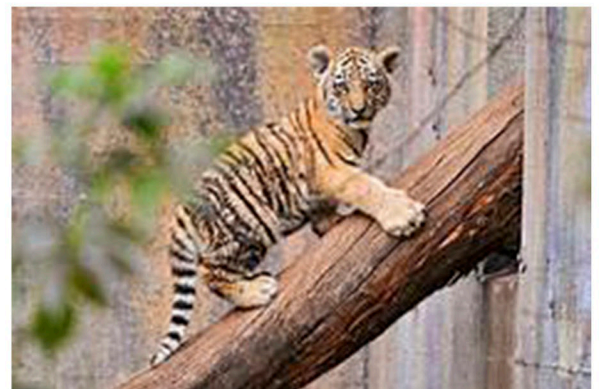
Important Facts for your Design:

- The Bengal Tiger is from Bangladesh in Asia.
- They are the only wild cats that like to play in water.
- They are carnivores (they eat meat).
- Tigers like to be high up so they can see all around their surroundings.



Build a ramp with a high platform for the tigers to see all over their enclosure.

1. Draw a sketch of your tiger next to a human. Try to make sure the sizes make sense
2. Draw a sketch of the enclosure, the ramp (incline), and the water feature.
3. Build your Project.
4. Fun-tivity:  
How fast an object slides down a ramp has to do with how steep the ramp is. You can test this with the toy puppy from your kit or another toy from your home. Change how steep the ramp is and see what happens Watch this video for help.  
<https://bit.ly/3gCKpCt>



Dont forget to share!!



# 3Dux|Design

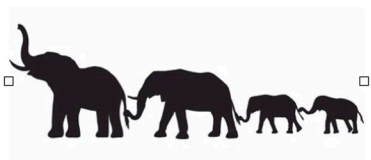


## The Beardsley Zoo Re-Do: The Elephant

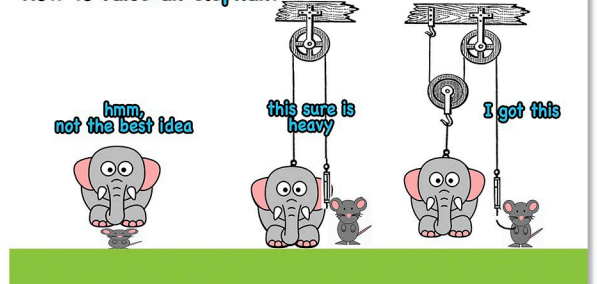
Fun Facts for your Design:

- Elephants are from forests of Africa and Asia.
- They love to play in water.
- When it's time to eat, the zoo staff provides these giant herbivores the chance to "forage" for their food. For instance, they regularly "hang" food up high by placing it in buckets strung from the a tree. This stimulates the elephants both mentally (like figuring out how to get at the food using a pulley) and physically (it's a great workout for their trunk and neck muscles!)

1. Draw a sketch of your elephant next to a human. Try to make sure the sizes make sense
2. Draw a sketch of the enclosure, the activity (machine) and where visitors will stand
3. Build your Project
4. Take some photos and share for a chance to be posted on the 3DuxDesign Website
5. Fun-tivity: Draw a picture of every shape and angle connector you used!



How to raise an elephant

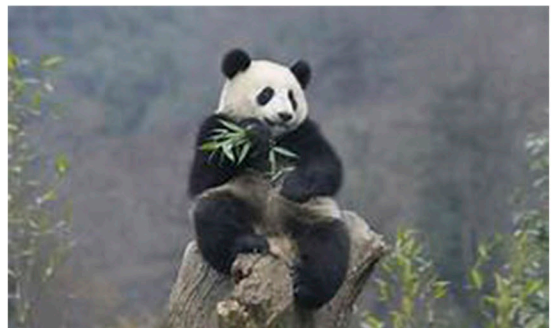
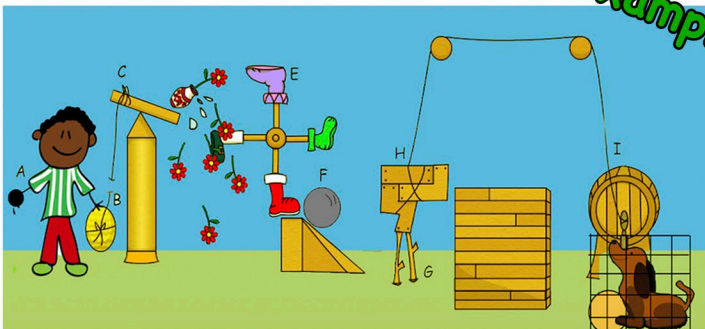




## Fun Facts for your Design:

- The staff would like the pandas to get lots of exercise. Design an obstacle course or playground for them. Try to include 2 simple machines.

- example







## The Beardsley Zoo Re-Do: A Polar Bear and a Ball

Important Facts for your Design:

- Polar Bears live in the icy cold Arctic. They love to swim and stand on floating ice.
- These mammals are only about 8 feet tall but weight up to 1,600 pounds!
- They are carnivores, eating mostly seals. Climate change is making it harder for them to find food to survive.



They love to swim and play with toys. The zoo enclosure has a man-made "bear den". The bears' favorite toy ball often bounces into it and gets stuck. Design a lever that the bears can use to lift the den so they can get the ball back.



1. Draw a sketch of your Polar Bear enclosure.
2. Draw a sketch of your lever.
3. Build your Project.

4. Fun-tivity:  
A linkage is made of multiple levers. See if you can change your design to make your lever system into a linkage. Learn more about linkages <https://bit.ly/3igvs9s>

