

Date: _____

Name: _____

This activity was created by Huda and Amelia.

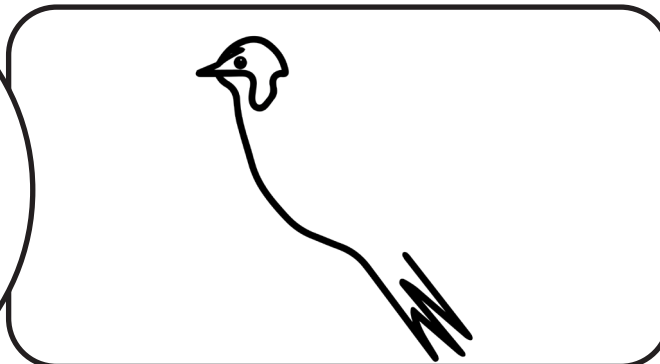
Use the Forces To Complete the Drawings

There are many different forces that affect the movement of objects and animals. They are often shaped to reduce the forces that slow them down and to best use the forces that help them move. Some of the common forces that affect movement are:

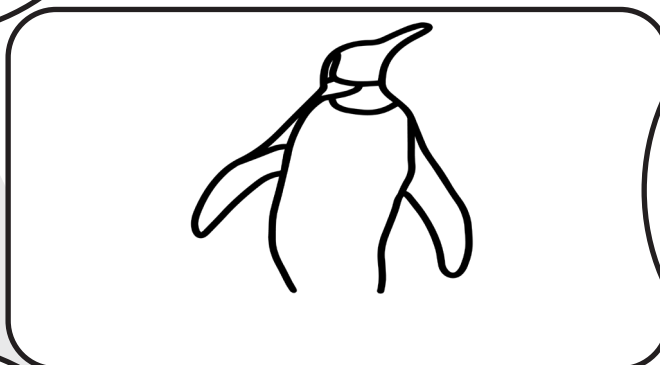
- Lift: this is a force that is perpendicular to the flow around it, often meaning it is pushing up, rather than forwards.
- Drag: this is a force that often slows down movement by causing friction and air resistance, to avoid too much friction streamline and smooth shapes are often incorporated.
- Thrust: is a force that uses propulsion to move things forward.
- Downforce: is a force that is the combination of gravity and air resistance that pushes down, it is often used in race cars to help them go faster.

Follow the directions in the bubbles to add parts to the animals and objects and learn about the forces the different parts effect.

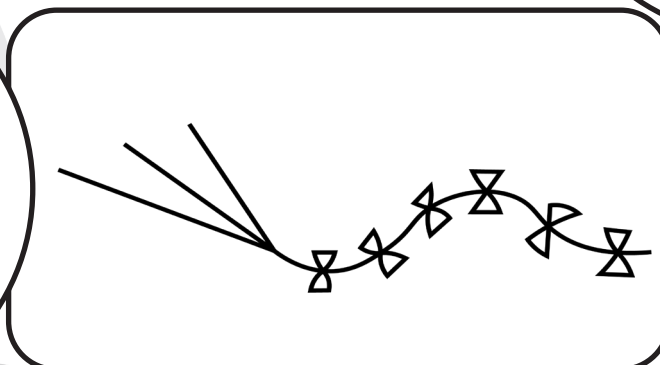
Draw the wings and back of the barn swallow. The barn swallow uses it's wings to create lift and fly, while it's steam-lined body lets it fly better by lowering the drag and resistance their body has with the wind.



Draw the webbed feet of the penguin. Their webbed feet helps propel them forward faster. This allows them to have more thrust and swim very fast, due to the increased surface area the webbing creates.

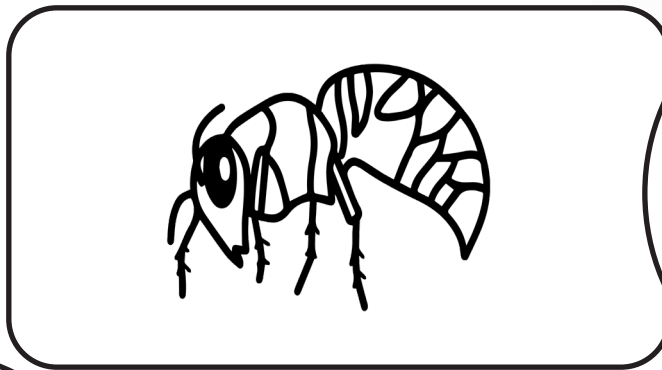


Draw the top of the kite. The shape of the kite creates a streamline shape to reduce drag, while also acting a lot like a wing to generate lift and make it fly.



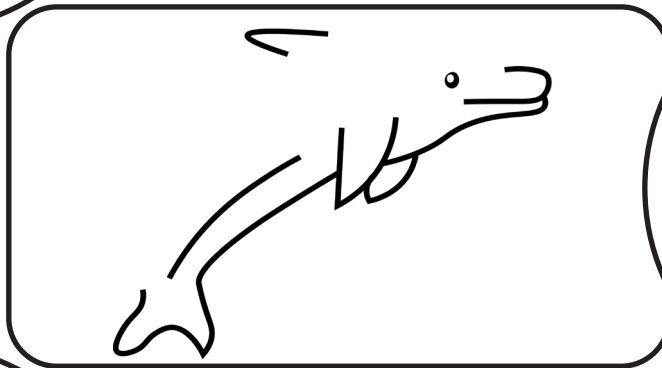
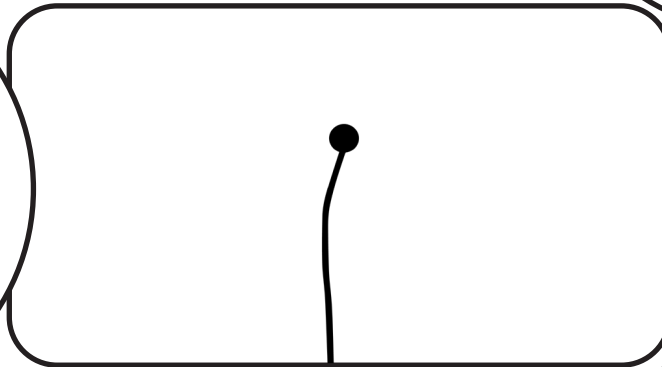
Date: _____

Name: _____



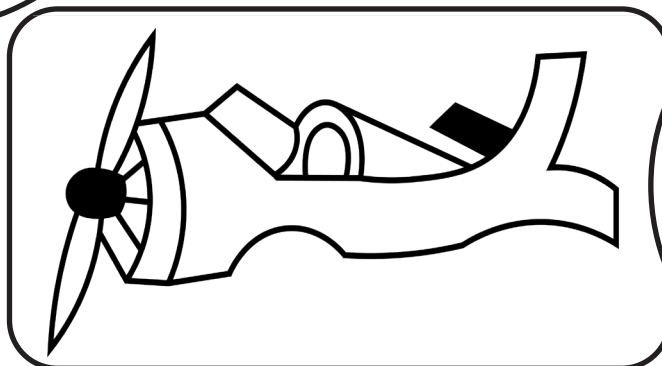
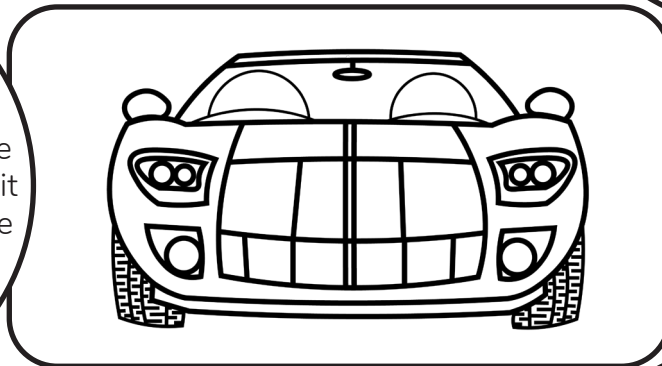
Draw wings on the bumble bee. Bees use their wings to thrust themselves by pushing the air aside and generating lift.

Draw the fluffy part of the dandelion, called the pappus. The pappus acts like a parachute that is raised into the air, creating a vortex letting the dandelion travel far.



Draw the back on this dolphin. The body of the dolphin is shaped to streamline the water around it and reduce the amount of drag and friction.

Draw a front wing on the front of the car (similar to a spoiler). This is an upside down wing, because instead of lifting the car up, it pushes it down closer to the ground, with a force called downforce, that allows the car to move faster.



Draw wings on this plane. The wings create lift on the plane, which is how the plane flies and goes higher.