



# BALLOON RACECARS



In this activity students are encouraged to learn about engineering and physics concepts. Once they have some key knowledge, they will be able to put their engineering skills to the test by designing and building their very own aerodynamic vehicle propelled by a balloon.

1

What is Engineering?

**Engineering** is the practical application of science and maths to solve problems. For example, engineers invented microwaves so we could quickly heat up our food when we're hungry. Engineers also design bridges so cars can cross big gaps quickly. Buildings, bridges, cars, electronic devices and so much more were designed by engineers!

Challenge: Look around your room, can you find anything that was designed and built by engineers?

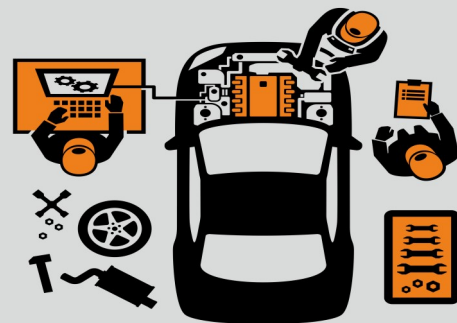


2

What is Automotive Engineering?

**Automotive Engineers** build cars, trucks, motorcycles and other kind of vehicles. They are responsible for designing the vehicle, putting it together as well as thinking about its maintenance.

Challenge: How many types of different vehicles can you think of?



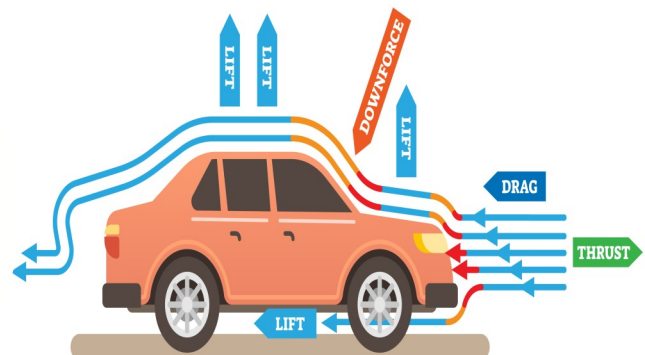
3

What does aerodynamic mean?

**Aerodynamics** is how the air moves around things. A car would be aerodynamic if it has a shape that reduces the **drag** from air moving past.

Drag is a force that slows the vehicle down as it makes it hard for it to move. **Thrust** is the push that moves the vehicle forward and is the opposite of drag.

Challenge: Explain how air moves around the car using the picture on the right.





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What materials will you need to build your balloon race car?

- **Balloon x 1:** this will store air so you car can move forward when you release the air (thrust).
- **Car body:** this could be anything from a plastic bottle, to an empty toilet roll. Use your imagination!
- **Wheels x 4:** We used plastic bottle caps, you can use card paper cut in circles or anything that could act as wheels.
  - **Tube:** to blow into your balloon. We used a straw!
  - **Tape:** to secure your balloon around the straw.
- **Wooden skewers or toothpicks x 2:** These will act as your car axles so you can attach the wheels at their ends.
  - **Decorations:** We used an old Birthday banner.



5

Use this space to **design** your car before building it. Think about how to make it as aerodynamic as possible.

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## Reflection

Use a tape measure to measure how far your car moved after you released the air from the balloon.

- What did you do well when designing and building your car?
- What would you do differently next time to make your car travel even further?

Remember, all engineers make mistakes and that's how they learn. If you made a mistake, find the problem and fix it, just like an engineer would do!

