

# SPEED Science of Racing Fundamentals (1) – Flow Tank

What do we need to consider when designing a fast car?  
The shape? The materials? The engine? The tyres?

At the **Flow Tank** exhibit, observe the liquid surrounding the 5 cyclists.



The liquid in front of the lead cyclists is less smooth than the trailing cyclists. Can you explain?

Why are the cyclists not in an upright position but bent forward?

## DO YOU KNOW?

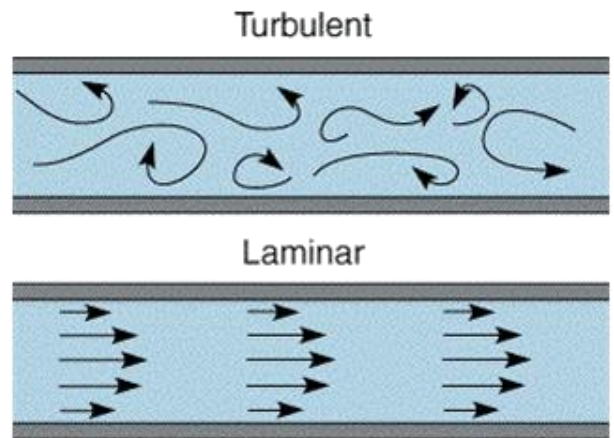
There are 2 types of flows in fluids (liquids & gases)

### Turbulent flow

Molecules in the fluid move in many different directions & at different speeds.

### Laminar flow

Molecules in the fluid move more or less smoothly in the same direction at the same speed.



Identify the type of flow for each of the pictures below. **T** for turbulent, **L** for laminar.



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Go to the flip side of the exhibit. There are 4 vehicles here.  
Does turbulence affect how fast a car can go?



In a race between the truck and the car, which vehicle will have the least turbulence? Why?  
[Assume both have same engine capacity]

## DO YOU KNOW?

**Streamline** is a contour on a body that offers the minimum resistance to a liquid or gas flowing around it.

Animals with streamlined bodies can move easily through air and water more efficiently. The same goes with vehicles.

Which of the pictures below have streamlined shapes? **Keywords:** streamline, turbulence, laminar

