

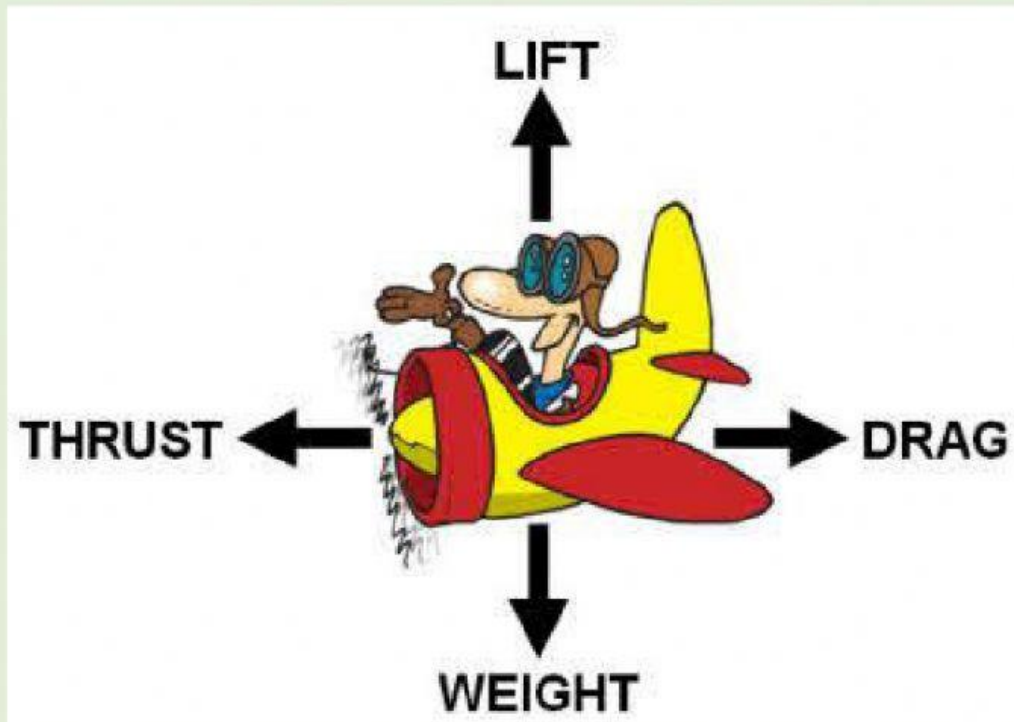


SCIENCE

CHAPTER 8-MOTION, FORCES AND DESIGN PROCESS

LESSON 2- FORCES AND TRANSPORTATION

PART 2



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HOW DO WE USE FRICTION TO STOP AND GO?

Friction is caused when two objects are in contact with each other.

- ❖ Friction works against motion.
- ❖ Example: Bicycle.
- ❖ When you want to stop, you press your brakes. That is friction. The brake pads touch the tire and stop the bike

WATCH VIDEO ABOUT FRICTION



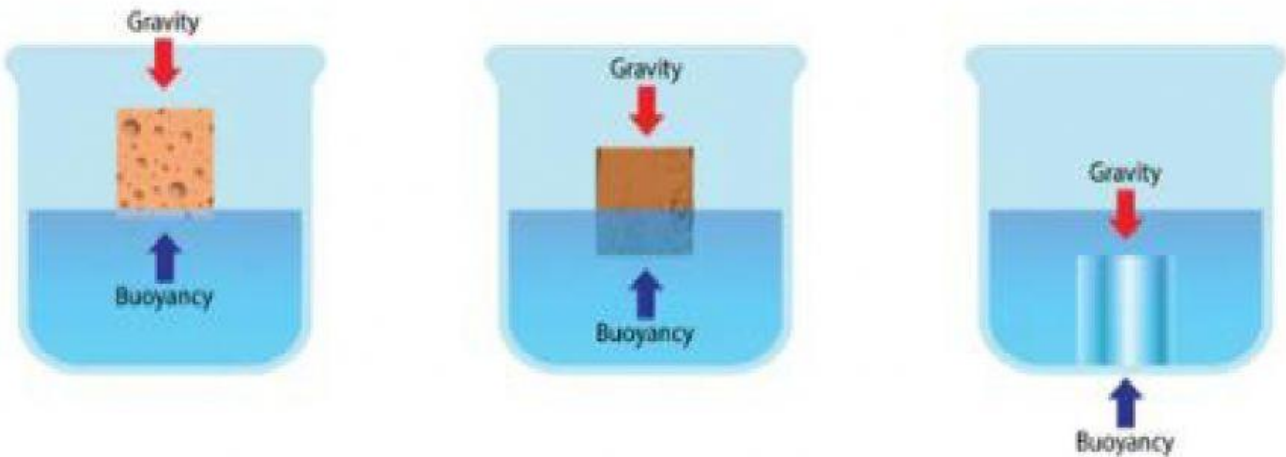
WATCH VIDEO ABOUT USES OF FRICTION



HOW DO BOATS FLOAT?

Upward force on an object is called buoyancy.

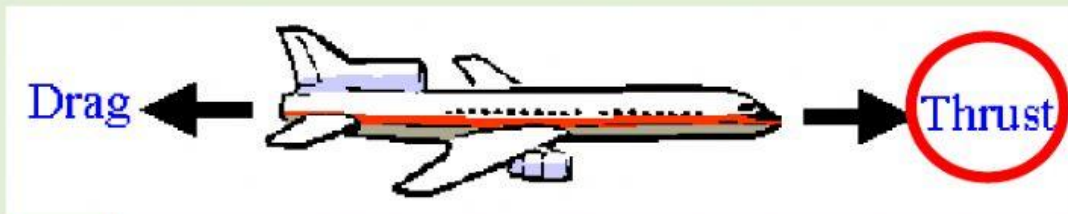
- ❖ If the force of gravity is more than buoyancy the object will sink.
- ❖ If buoyancy is equal to or more than gravity the object will float.



WATCH VIDEO ABOUT BUOYANCY

HOW DO PLANES, BOATS, AND CARS CONTROL THEIR MOTION?

- ❖ **Planes**- to increase lift a pilot will give more thrust.



- ❖ **Boats**- a boats propeller provides thrust.



- ❖ **Cars**- when the driver turns the steering wheel left, the tires move left.



PRACTICE QUESTIONS:

1. Name a force that acts on a boat but not on a car.

2. **Vocabulary** Which force helps a train stop and go?

3. **Test Prep** What slows down the movement of a plane?

A thrust
B drag
C buoyancy
D lift

4. Which two forces slow an airplane's motion as it rises into the air?

A thrust and lift
B thrust and drag
C drag and lift
D drag and gravity

5. Students have each created their own designs for cargo boats. Which would work best to test their designs?
- A Put the boats in water to see which float and which sink.
 - B Put the boats in water and add weights to see which can hold the most weight before sinking.
 - C Weigh and measure each boat and then place them in water to see which sink and which float.
 - D Have students vote on the best design.

6. The table below shows the weights of different drone prototypes. On which object is the pull of gravity strongest?

Object	Weight (N)
Drone A	12.5
Drone B	10.2
Drone C	12.3
Drone D	7.6

- A Drone A
- B Drone B
- C Drone C
- D Drone D

7.

The table below shows direction of the forces acting on a rocket that is moving forward. Engineers need to increase the forward velocity of the rocket.

Force	Weight (N)
gravity	down
drag	backward
thrust	forward

Which change should engineers make?

- A increase drag
- B increase thrust
- C decrease thrust
- D increase gravity