

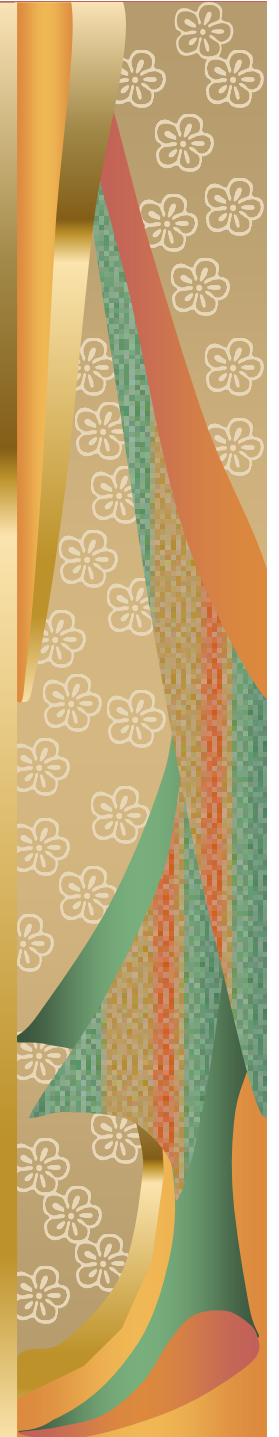
# Thursday October 30<sup>th</sup>

- Notes on Chapter 13
- Paper airplanes!
- Questions at the end of the chapter
  - Page 407 Questions 1-19
  - Page 408 Questions 26-27
  - Page 409 Questions 1-6



# Chapter 13 Forces in Fluids

- Pressure – the result of a force distributed over an area
- PSI – pounds per square inch
- In the metric system, we use Pascals
- Or kPa (KiloPascal)
- 1Pa is equal to 1 Newton/1 m<sup>2</sup>



# Calculating pressure

■ Pressure = Force / Area

■ Example – A 1000 N person is standing on 2 feet. The area of the person's feet is  $.25 \text{ m}^2$ . What is the pressure of the person on the ground?

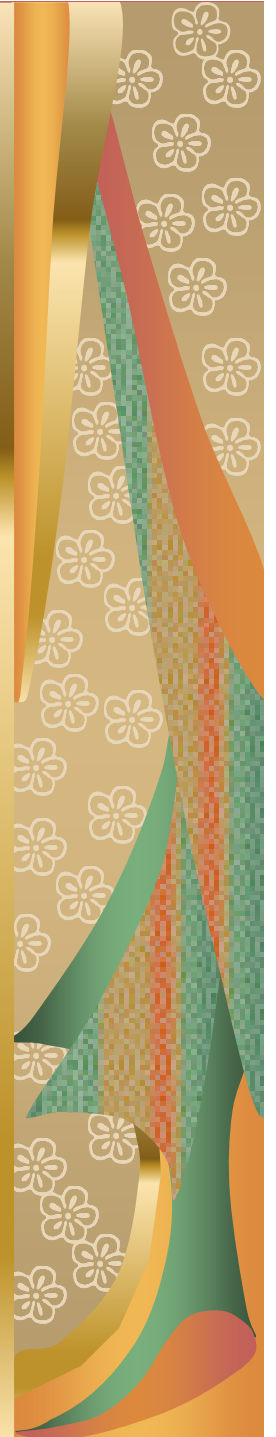
■  $1000\text{N}/.25\text{m}^2 = 4000 \text{ N/m}^2 = 4000 \text{ Pa}$

■ What happens if they stand on 1 foot?



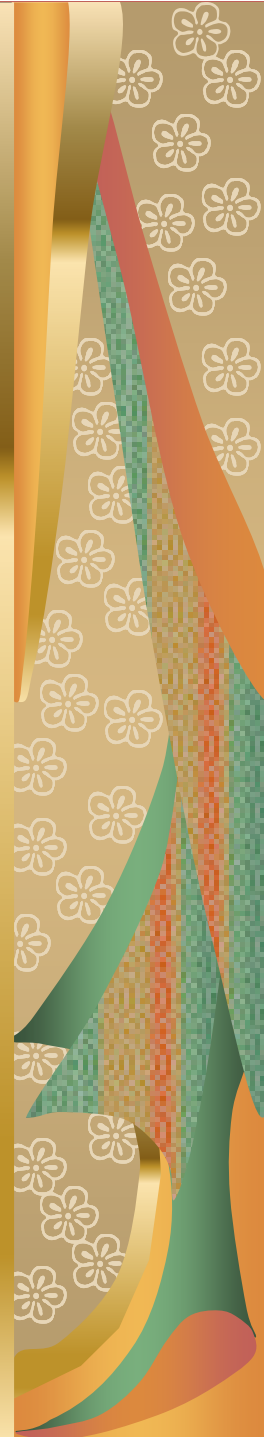
# Forces in Fluids

- Water pressure increases as you go deeper
- Air Pressure decreases as you go higher



# Pascal's Principal

- A change in pressure at any point in a fluid is transmitted equally and unchanged throughout the fluid
  - Look at page 395
- **Fluid** – a substance that assumes the shape of its container
  - (Note – air is considered a fluid)
- **Hydraulic System** – a device that uses pressurized fluid acting on pistons to change a force



# Bernoulli's Principle

- As the speed of a fluid increases, the pressure within the fluid decreases
- Take a piece of paper and try it!
- Look at page 398 and read it!
- Make a paper airplane, and let's see who's flies the farthest.



# Buoyancy

■ The ability of a fluid to exert an upward pressure

■ This is how a boat floats, or wood floats

■ Archimede's Principle - The **Bouyant Force** on an object is equal to the weight of the fluid displaced be the object.

■ Buoyant Force – Look at page 401 and read page 402

