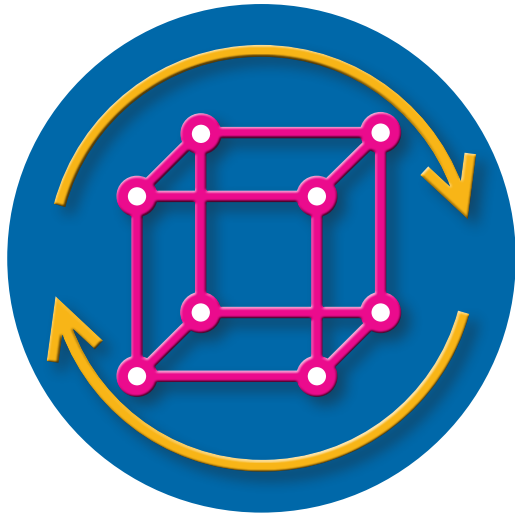*Handout 8* # Designing Your Canoe

How big should you build your boat? You want to be sure it's going to float with your team's paddler in it.

Remember the buoyancy principle: If the boat weighs more than the water, your boat will sink!

Your team needs know two things:
- How much will your team's boat weigh with a person in it?
- How much will the water displaced by the boat weigh?

How much will your team's boat weigh with a person in it?

Get your team together and decide who is going to be your paddler. Do you want the tallest person? The shortest person? The strongest person?

Formula: Weight of Person + Weight of Building Supplies = Weight of Boat

Example: 110 lbs Paddler + 3 lbs Building Supplies = 113 lbs

Your Boat: _____ + _____ = _____ Weight of Boat (A)

How much will the water displaced by the boat weigh?

This is the tricky part. You get to decide the size of your boat, but it has to float. Your team may have to design your boat more than once to make sure it will float.

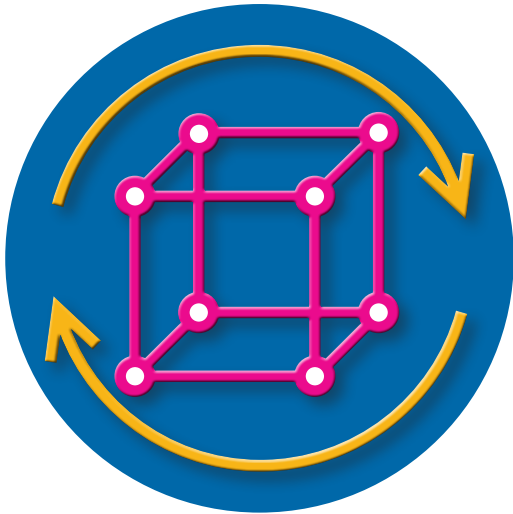## First, decide what size you think you want to build your boat.

Formula: Boat Length x Boat Height x Boat Depth = Cubic Feet

Example: A boat that's 4' long x 2' wide x 2' deep = 16 Cubic Feet

Your Boat: _____ x _____ x _____ = _____ Cubic Feet

Designing Your Canoe

Good job! Now you can calculate how much the water displaced by your boat weighs.

We know that one cubic foot of water (12" long x 12" wide x 12" deep) = 60 lbs

Formula: Boat Cubic Feet x 60 lbs = Total Weight of water displaced

Example: 16 Cubic Feet x 60 lbs = 960 lbs of water displaced

Your Boat: _____ x 60 lbs = Weight of Water Displaced (B)

Moment of truth: which weighs more, your boat or the water?

BOAT WEIGHT (A)   WATER WEIGHT (B)

_____   _____

Will your boat float?