**Ship’s Log**

**Cape Cod Catboat Crew Challenge: BOAT BUILDING**

Sailor’s name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

After exploring the websites and completing the Investigations in the Catboat Crew CATegory: BOATBUILDING, answer the following. You can use words or diagrams.

**TOTAL POINTS:**

\_\_\_\_\_\_\_\_\_ out of 100

90-100pts 1st Mate

80-89pts Helmsman

70-79pts Deckhand

**VIDEOS**

1. What is buoyancy? (5pts)

2. What is density? (5pts)

3. Explain how a bowling ball is more dense that a basketball. (10pts)

4. Why did the water level rise in the bathtub when Archimedes took a bath? (10pts)

5. What does “displace” mean? (5pts)

A) to make fun of B) to cause to move from (an object’s) usual place

**Ship’s Log : BOAT BUILDING page 2**

6. If an object is heavier that the weight of the water it displaces, what happens to that object? (5pts)

A) it floats B) it sinks

7. What 2 main design features of cruise ships allow these massive boats to float? (5pts)

A) they are large and hollow B) they are small and solid

8. Extend your thinking! Based on your answer to #7, **explain why** the *Syracusia* or a cruise ship floats instead of sinks. (Hint: Remember, if an object is more dense than the water it displaces, or moves out of the way, the object will sink.) (15pts)

9. As a boat builder, would you want your boat to weigh the same or less than the weight of the water it displaces? Explain your thinking. (10pts)

**Ship’s Log : BOAT BUILDING page 3**

**INVESTIGATIONS**

1. What happened when you placed the foil ball into the water? A) it sank B) it floated

2. What happened when you placed the boat into the water? A) it sank B) it floated

3. The foil ball/pennies and the boat/pennies were approximately the same mass. (5pts)

A) true B) false

4. How did the density of each foil/penny combination affect (influence) your results? (10pts)

5. What happened when you carefully placed your foil ball on the boat with the pennies?

A) the both floated B) they both sank

6. Put it all together! Based on what you learned about buoyancy, why is the foil boat able to stay afloat with both its weight and the added weight of the foil ball (which, remember, by itself, the foil ball sank)? Think about it…it’s like an anchor. Throw it overboard and it sinks to the bottom. Hoist it to the deck and does it make your boat sink? (15pts)