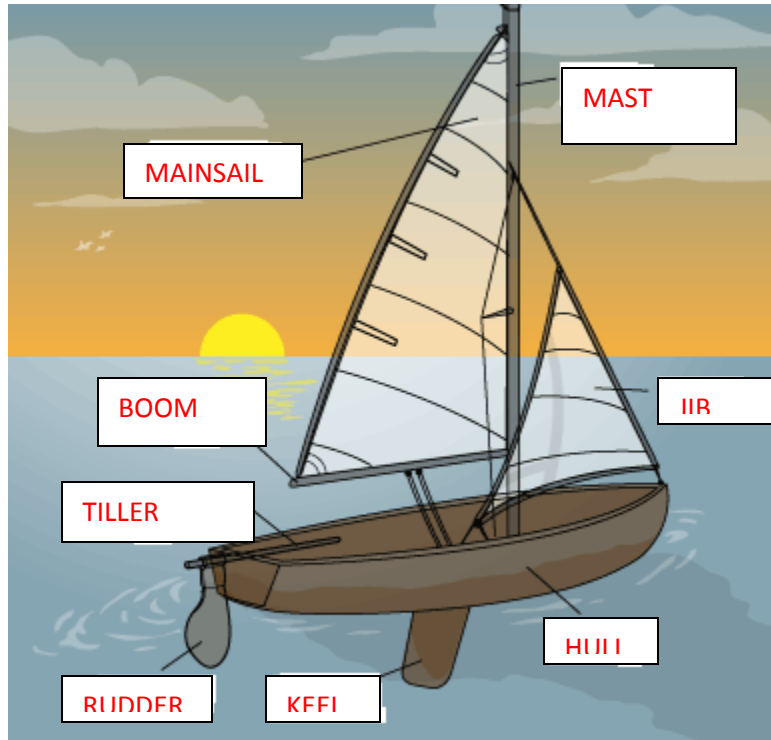


Name _____

Introduction to Technology - 7

Sail Boat Unit Review Sheet

1. Label the parts of the sailboat.



2. Who is Bernoulli and how did his principle apply to sailboats?

Bernoulli's theorem, also called the **Longer Path Explanation**, explains lift in terms of high and low air pressures on either side of the sail. Imagine the front of the boat angled upwind, or into the wind. As the breeze hits the sails, the air particles rush over both sides. Theoretically, the air particles moving across the outer, convex side of the sail have a longer distance to travel in the same amount of time as the particles moving across the inner, concave side.

3. What types of drill bits have we used in class?

Forstner, Twist Bit, Spur Point Bit, Spade Bit

4. Compare and contrast Bernoulli's Principle and Newton's Third Law as it applies to sailing.

Bernoulli's theorem, also called the **Longer Path Explanation**, explains lift in terms of high and low air pressures on either side of the sail.

Newton's Third Law describes lift in terms of the reaction of the wind's air particles to the mainsail and jib. The law states that every action has an equal and opposite reaction.

Directions: Match the answer on the left with the definition on the right.

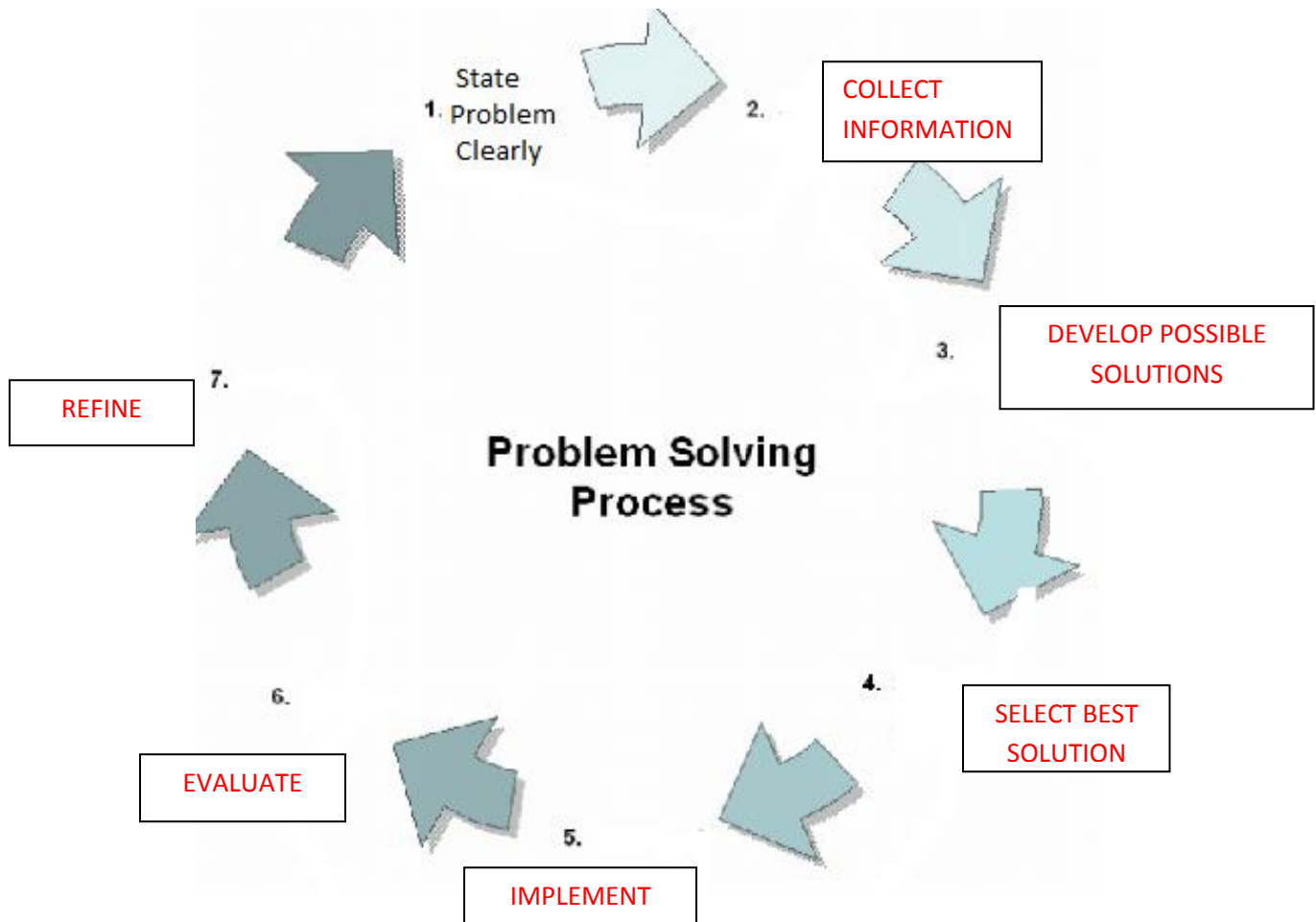
- | | |
|--------------------------------|------------------------------------|
| 5. Bow <u>G</u> | A. Left side of boat |
| 6. Mast <u>C</u> | B. Friction |
| 7. Beam <u>J</u> | C. Vertical spar that holds sail |
| 8. Sail <u>I</u> | D. Prevents skidding |
| 9. Port <u>A</u> | E. The "body" of the boat |
| 10. Starboard <u>F</u> | F. Right side of boat |
| 11. Keel <u>D</u> | G. The front of the boat |
| 12. Drag <u>B</u> | H. The rear of the boat |
| 13. Hull <u>E</u> | I. A device used to catch the wind |
| 14. Stern <u>H</u> | J. The width of the boat |
| 15. Explain how a boat floats. | |

Floating depends on two things: **displacement** and **density**. **Archimedes' principle**, which explains the concept of buoyancy, states that in order for an object to float, it must displace an amount of water equal to its weight. As a sailboat's weight pushes downward and displaces water beneath it, an upward force equal to that weight holds the boat up. Surface area also helps to keep the boat afloat.

More surface area gives an object a better chance to displace enough water to offset its own weight.

16. Sketch a top and side view of a sail boat

17. Label all the steps in the Problem Solving Process



18. Why isn't the miter saw used to cut inside angles?

BECAUSE THE SAW IS TOO BIG TO FIT ON THE INSIDE OF ANGLES.

19. How are sailboats able to sail into the wind?

THE PROCESS OF SAILBOATS SAILING INTO THE WIND IS CALLED TACKING. IT IS GETTING FROM POINT A TO POINT B IN A ZIG ZAG MOTION

20. Why do you not shake the can of clear coating before applying?

SHAKING THE CLEAR COAT CAUSES AIR BUBBLES

21. Explain in detail all the steps taken and tools used to make the sailboat.

